

**SUMMARY OF 1989 ACTUARIAL VALUATIONS
FOR THE LEGISLATIVE COMMISSION
ON PENSIONS AND RETIREMENT**

May 15, 1990

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INTRODUCTION

This report summarizes the results of the July 1, 1989 actuarial valuations performed by the Commission Actuary, The Wyatt Company.

All calculations were performed in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, last amended by the Legislative Commission on Pensions and Retirement on September 20, 1989.

The purpose of this report is to provide the members of the Legislature a summary of the actuarial valuations of 13 public pension plans, including the three major State plans, by comparing information on:

- | | |
|-----------------|-------------------------|
| . Membership | . Funding Ratios |
| . Assets | . Actuarial Liabilities |
| . Contributions | . Projected Cash Flows |

Major pension legislation was passed in 1989 which improved benefits, increased the assumed interest rate, extended the period for amortizing unfunded liabilities and increased the statutory contributions for two statewide plans. Section 11 reviews the changes.

The Appendix contains additional information on each of the thirteen public pension plans that were evaluated. That information is in the form of the highlights page from each of the individual reports. More detailed information is provided in each plan's actuarial valuation report. These individual reports have been filed with the Reference Library and with the staff of the Legislative Commission on Pensions and Retirement and are available from either source.

The actuarial valuation of the Relief Association Consolidation Accounts, which was performed by the Commission Actuary, is not included in this summary because of its

small size and unique character. There were three consolidated accounts on July 1, 1989, consisting of Buhl Police, Duluth Police and West St. Paul Fire.

This report does not include the 43 local Police and Fire Funds which are closed to new membership, the University of Minnesota Supplemental Retirement Plan (which is also closed to new membership) and numerous volunteer firefighter pension plans.

SECTION 1
STATUTORY REQUIREMENTS

The purpose of an actuarial valuation is to establish an appropriate rate of funding for benefits that may not be payable for many years in the future. This process requires determining the value of future benefits to be paid to current members. Such determinations require assumptions about future events.

Assumptions may be categorized as economic assumptions or demographic assumptions. The primary economic assumptions, which are shown in the table below, are established by Minnesota Statutes and have a very significant effect on the calculation of actuarial liabilities.

The table shows a pre-retirement interest rate of 8.5% for all plans except for Minneapolis Employees and a post-retirement rate of 8.5% for the three First Class City Teachers Plans. This 8.5% rate was effective July 1, 1989 and replaced a rate of 8.0%.

<u>Administrator</u>	<u>Plan</u>	<u>Salary Increases</u>	<u>Interest Rate</u>	
			<u>Pre- Retirement</u>	<u>Post- Retirement</u>
MSRS	State Employees	6.5%	8.5%	5%
MSRS	Correctional Employees	6.5%	8.5%	5%
MSRS	State Patrol	6.5%	8.5%	5%
MSRS	Judges	6.5%	8.5%	5%
MSRS	Legislators	6.5%	8.5%	5%
MSRS	Elective State Officers	6.5%	8.5%	5%
PERA	Public Employees	6.5%	8.5%	5%
PERA	Police & Fire	6.5%	8.5%	5%
TRA	Teachers (Statewide)	6.5%	8.5%	5%
MERF	Minneapolis Employees	3.5%	5%	5%
Minneapolis Teachers	Minneapolis Teachers	6.5%	8.5%	8.5%
St. Paul Teachers	St. Paul Teachers	6.5%	8.5%	8.5%
Duluth Teachers	Duluth Teachers	6.5%	8.5%	8.5%

The demographic assumptions, while also important, have a lesser effect on the calculation of actuarial liabilities and are concerned with such factors as when members retire and how long they can be expected to live. These demographic assumptions vary by individual plan and are based on previous experience studies.

Once the value of future benefits to be paid to current members has been calculated, the next step is to determine the rate at which this value will be funded. The desired rate of funding dictates the selection of the actuarial cost method. Minnesota Statutes require the use of the Entry Age Normal Actuarial Cost Method.

The Entry Age Method funds benefits for each individual member by contributions that are a level percentage of the member's salary from entry into the plan until retirement. Each year a contribution is determined by applying this percentage to the member's salary and the resulting amount is referred to as the "normal cost" for that year.

Since the cost method defines the rate of funding during the member's active years, it follows that the amount of funding required for all accumulated prior years of service through the valuation date is the amount of "actuarial accrued liability". If the normal cost is contributed each year beginning from entry into the plan and if all assumptions come true, then the assets in the fund will equal the actuarial accrued liability. When assets and liabilities are equal, the plan is fully funded. If the assets are insufficient, then there is an "unfunded actuarial accrued liability".

The Statutes define the method for determining asset value for purposes of calculating this unfunded actuarial accrued liability. The required value of assets is based on the cost value of the assets plus 1/3 of the amount of unrealized gains and losses. This amount is referred to as the "current assets". For those plans that transfer funds upon retirement to a post retirement fund, the current asset value is the value of the liability based on the current benefit level and a 5% interest rate.

Minnesota Statutes also establish a date for amortizing the amount of unfunded. Legislation in 1989 changed the amortization date to 2020 for all the funds reviewed in this report except for MERF (Minneapolis Employees Retirement Fund). Previously, most of

the funds had amortization dates of 2009 or 2010. The rate for funding this unfunded amount by 2020 is expressed as a level percentage of payroll. Thus, as payroll increases so will the dollar amount of contribution to amortize the unfunded.

An exception to this amortization rule is the funding required for MERF. In the case of MERF, the unfunded is required to be amortized by the year 2017. Furthermore, the rate of funding is expressed as a level dollar amount each year rather than a level percentage of payroll.

SECTION 2

CHARACTERISTICS OF THE PLANS

For purposes of this report, the 13 plans have been grouped as follows:

- . The three largest statewide plans.
- . The six plans covering specialty, non-teaching professions.
- . The four plans related to employees of First Class Cities.

These plans do not represent homogeneous groups. For example, one plan, MERF, is not open to new members and is referred to as a "closed plan". Another example is that six of the plans provide two levels of benefit - a basic benefit to cover those members who are not contributing to Social Security and a much smaller coordinated benefit for those members who are contributing to Social Security.

Another important distinction between the plans is that eight of the plans transfer required reserves upon a member's retirement from the active account to the Minnesota Post Retirement Investment Fund (MPRIF). Transfers are made assuming that MPRIF will earn 5% in the future. If earnings are in excess of 5%, then higher permanent benefits will be provided to retired members. In the case of the Elective State Officers Plan and for certain categories of annuitants in other State plans, the monies are not transferred to MPRIF, but payments are adjusted by the same percentage as though the retired member or survivor had been drawing payments from MPRIF.

MERF does not participate in MPRIF, but does have a corresponding post retirement adjustment mechanism called the Retirement Benefit Fund that provides for escalating payments when investment yield exceeds 5%. The three First Class City Teachers' Plans have different methods for sharing investment gains with retirees and they do not maintain a separate post retirement fund.

Another distinction is the Statutory requirement for employer contributions. All but three of the plans require that the employer concurrently contribute a certain percentage based on the member's rate of pay to help prefund the pension obligation. The Statutes do not require the employer to prefund benefits during the active member's working lifetime for

Judges, Legislators and Elective State Officers. For the Judges and Legislators Plans, the employer contributes the additional money that is needed to fund the annuity paid from MPRIF when the plan member retires. Or, if the annuity is not paid from MPRIF, the employer makes contributions as necessary to meet the monthly payments.

The following table summarizes the distinctions described above:

<u>Plan</u>	<u>New Members</u>	<u>Basic/ Coordinated</u>	<u>Post Retirement</u>	<u>Statutory Employer Contributions</u>
Public Employees	Yes	Yes	MPRIF*	Yes
State Employees	Yes	No	MPRIF	Yes
Teachers (Statewide)	Yes	Yes	MPRIF	Yes
Correctional Employees	Yes	No	MPRIF	Yes
State Patrol	Yes	No	MPRIF	Yes
PERA Police & Fire	Yes	No	MPRIF	Yes
Judges	Yes	Yes	MPRIF	No
Legislators	Yes	No	MPRIF	No
Elective State Officers	Yes	No	NA	No
Minneapolis Employees	No	No	RBF**	Yes
Minneapolis Teachers	Yes	Yes	NA	Yes
St. Paul Teachers	Yes	Yes	NA	Yes
Duluth Teachers	Yes	Yes	NA	Yes

* Minnesota Post Retirement Investment Fund

** Retirement Benefit Fund

SECTION 3
MEMBERSHIP SUMMARY

Table 1 on the following page summarizes the number of members in these three primary classifications:

- Active members who are continuing to accrue benefits under the plan.
- Terminated members who have a vested right to receive benefits in the future.
- Annuitants who are presently receiving benefits as retired members, disabled members or survivors of members.

Most funds also have a small actuarial accrued liability which represents the employee contributions to be refunded to those members who have terminated without any vested rights, and some funds have liabilities for those members who are currently on a leave of absence but can be anticipated to return to work.

Overall active membership increased 3% since last year. The only plans with a reduction in active membership were MERF, which is closed to new members and Minneapolis Teachers.

The total number of annuitants increased by 3% over last year.

Table 1
MEMBERSHIP SUMMARY
AS OF JUNE 30, 1989

<u>Plan</u>	<u>Active Members</u>	<u>Terminated Members with Deferred Benefits</u>	<u>Annuitants</u>
Public Employees	99,515	2,349	27,872
State Employees	48,653	1,355	13,079
Teachers (Statewide)	64,796	1,887	16,550
Correctional Employees	1,317	58	357
State Patrol	765	19	455
PERA Police and Fire	5,891	110	1,412
Judges	257	4	166
Legislators	201	95	161
Elective State Officers	6	6	8
Minneapolis Employees	2,905	96	4,897
Minneapolis Teachers	3,164	525	2,406
St. Paul Teachers	3,312	36	1,236
Duluth Teachers	1,620	43	668
 Total	 232,402	 6,583	 69,267
 Prior Year Total	 224,791	 6,146	 67,313
 Change From Prior Year	 7,611	 437	 1,954
% Change	3%	7%	3%

SECTION 4
FINANCIAL SUMMARY

Table 2 shows the contributions (employee and employer) and benefit payments reported by the fund during the twelve months ending June 30, 1989. Over the past year, contributions have increased 7% and benefit payments have risen 8%.

The table also shows the asset value used to determine the unfunded actuarial accrued liabilities (described in Section 1). This asset value is called the "current assets" and is based on cost value of the assets plus 1/3 of the amount of unrealized gains and losses.

The market values for each plan equal or exceed the value of current assets. However, the difference between market and current asset values is not recognized for actuarial purposes regardless of whether the difference is positive (as it is this year) or negative.

Benefit payments represent all payments whether periodic or a lump sum return of contributions. Also, amounts paid from the post retirement funds (MPRIF and RBF described in Section 2) are included.

Table 2
FINANCIAL SUMMARY
AS OF JUNE 30, 1989
(In Thousands of Dollars)

<u>Plan</u>	<u>Prior Year</u>		<u>Current Assets</u>
	<u>Contributions</u>	<u>Benefit Payments</u>	
Public Employees	\$161,831	\$174,593	\$2,992,285
State Employees	89,358	77,502	1,871,542
Teachers (Statewide)	242,018	166,198	4,567,997
Correctional Employees	4,832	3,234	85,441
State Patrol	7,623	7,265	167,271
PERA Police and Fire	37,042	16,415	656,654
Judges	3,608	3,476	23,352
Legislators	1,291	1,278	12,317
Elective State Officers	176	105	315
Minneapolis Employees	24,694	54,727	776,522
Minneapolis Teachers	20,694	31,346	385,146
St. Paul Teachers	15,830	15,758	260,402
Duluth Teachers	4,047	3,781	86,539
Total	\$613,044	\$555,678	\$11,885,783
Prior Year Total	573,274	514,492	10,483,124
Change From Prior Year	39,770	41,186	1,402,659
% Change	7%	8%	13%

SECTION 5

1990 PENSION PLAN CONTRIBUTIONS: STATUTORY VS. REQUIRED

The next three graphs present a comparison of the contributions presently required by Statute to the required contributions calculated by the Commission Actuary. The contributions are determined by the 1989 actuarial valuations and apply to the 1990 Fiscal Year.

The bottom half of each graph expresses the contributions as a percentage of payroll. The top half of the graph illustrates the difference between the statutory and required percentages. When the statutory rate is higher than the required rate, there is a sufficiency and when the statutory rate is lower, there is a deficiency.

Statutory contributions include both employee and employer contributions. However, in the Judges, Legislators and Elective State Officers plans only the employee contributions are made on a regular recurring basis. Employer contributions are made when needed to make benefit payments or to set up reserves in MPRIF. Beginning with the 1989 actuarial valuations, employer contributions were projected for purposes of determining statutory contribution levels for the first time. As a result, sufficiencies are shown this year for Judges and Elective State Officers and the deficiency for Legislators is much smaller than in previous years.

The required contribution consists of three parts:

- Normal cost - the cost attributable to the current year.
- Supplemental contribution - the amount required to amortize the unfunded actuarial accrued liability as a level percentage of payroll at a future date (usually July 1, 2020).

- . Expenses (this amount is included in the graphs as part of the normal cost because of its relatively small size).

In order to make the graphs more readable, the contribution percentages have been rounded. The formal results may be found in the Appendix.

Overall, the statutory contributions of 11.9% slightly exceed the required contributions of 11.4%. However, there are some notable differences among the plans.

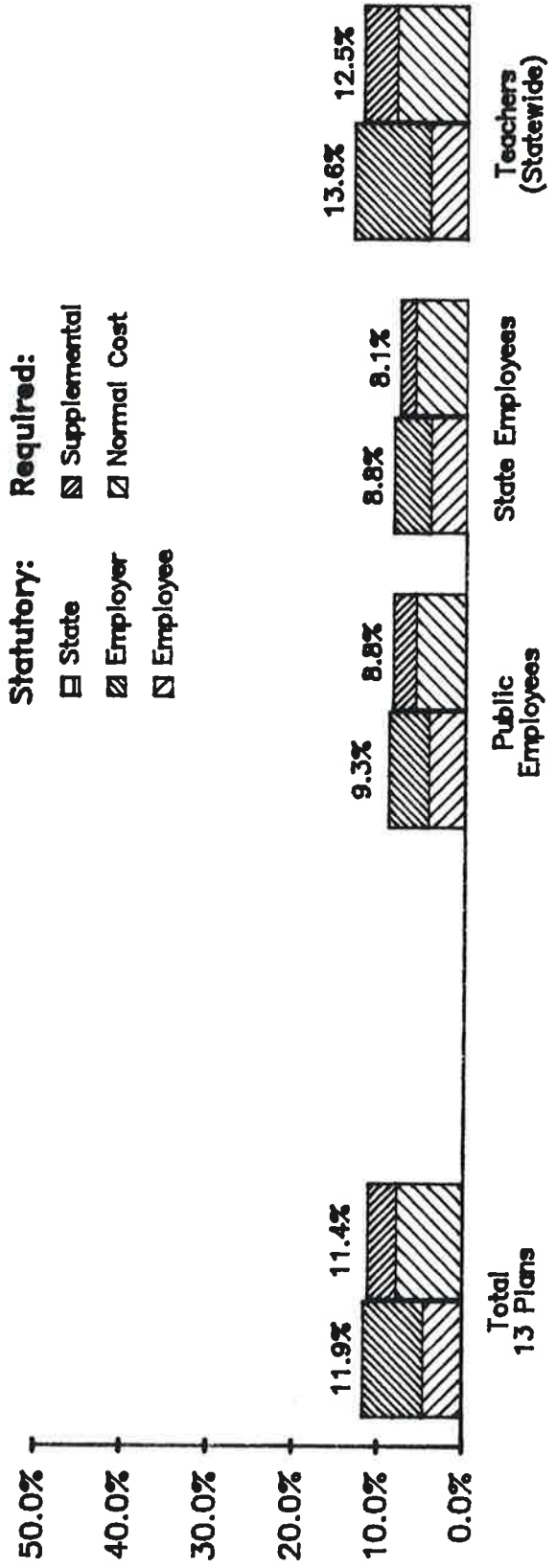
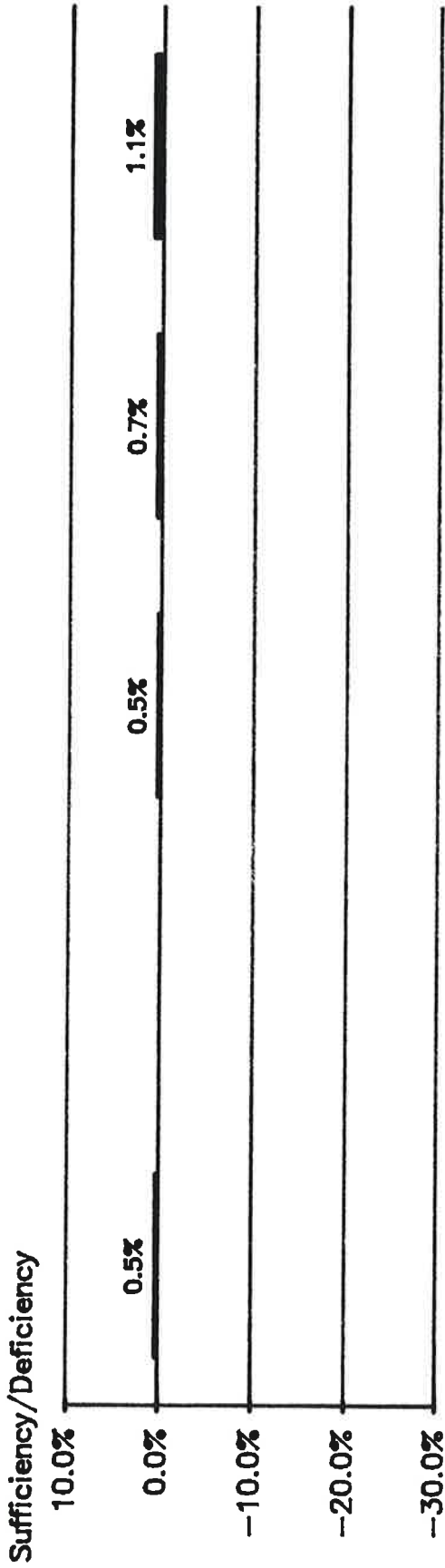
There is a 5.2% deficiency shown for the Legislators Plan. As described earlier, while this is a true deficiency at the present time, this is not a long term problem as long as the State makes the agreed-upon contributions as they become due in future years.

The remaining plans showing current deficiencies, in order of magnitude, are:

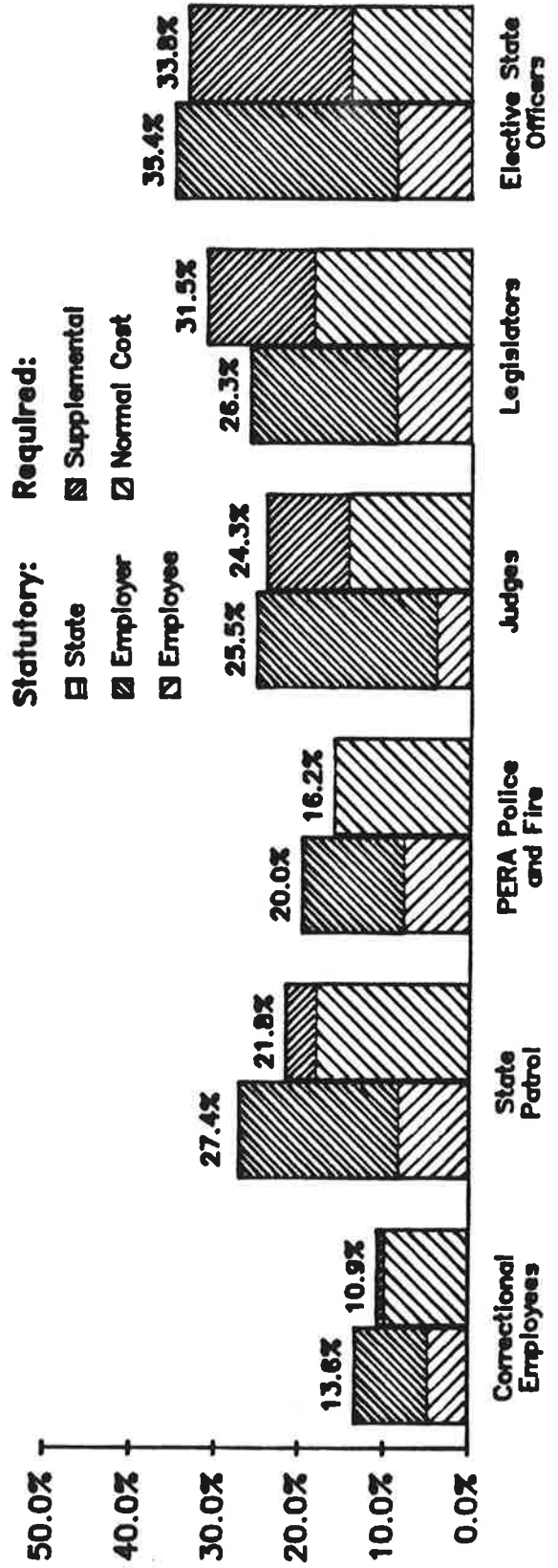
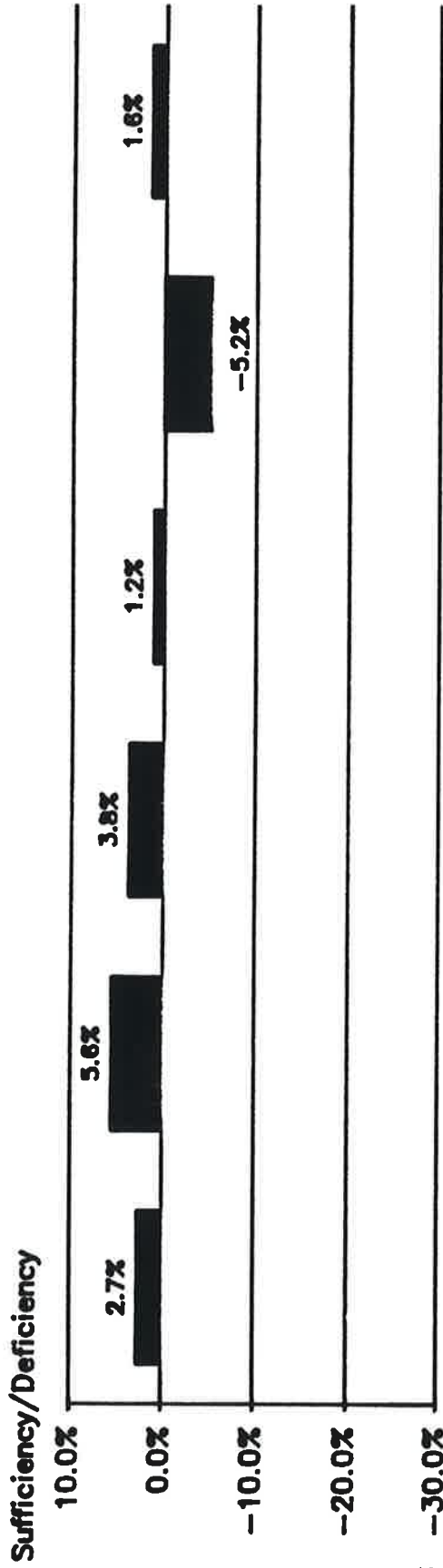
<u>Fund</u>	<u>Deficiency</u>		
	<u>1988</u>	<u>1989</u>	<u>1990</u>
. Minneapolis Teachers	-10.4%	-11.4%	-12.1%
. St. Paul Teachers	- 3.7	- 4.5	- 3.8
. Duluth Teachers	- 0.1	- 0.9	- 0.9

The 1989 legislation affected the required contributions for all plans except for MERF, and changed the statutory contributions for State Employees and Public Employees. More details are provided in Section 11.

1990 Pension Plan Contributions: Statutory vs. Required

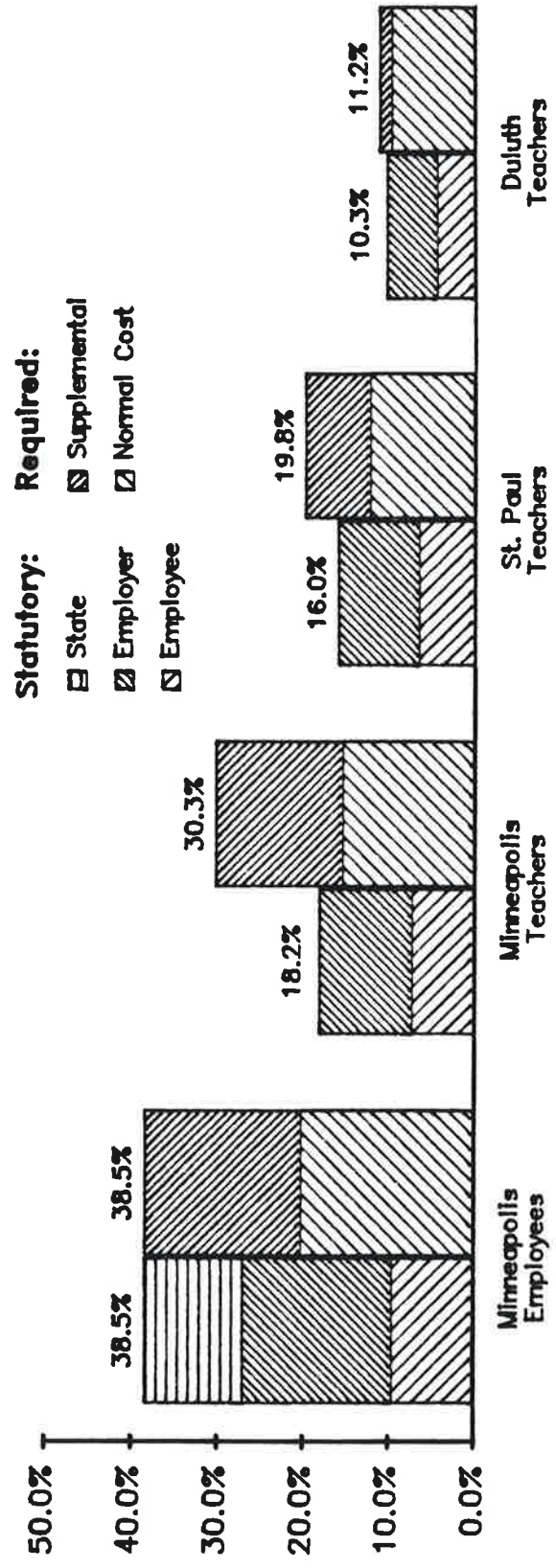
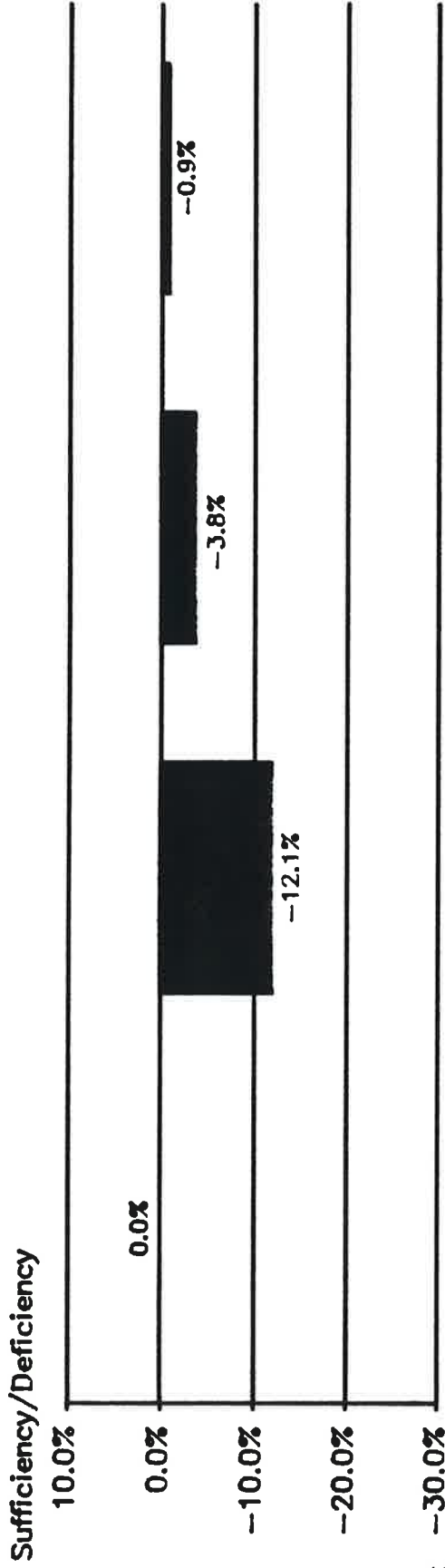


1990 Pension Plan Contributions: Statutory vs. Required (cont)



Plan

1990 Pension Plan Contributions: Statutory vs. Required (cont)



Plan

SECTION 6
CONTRIBUTIONS FOR 1990 FISCAL YEAR

Each plan's projected payroll for the 1990 Fiscal Year is used to produce the contributions in Table 3. This table is important because it illustrates the relative dollar size of the funds according to contribution level.

In aggregate, the statutory contributions are sufficient by \$33.3 million which is 5.0% of the total required contributions of \$670 million.

However, focusing solely on the three First Class City Teachers' Plans, the shortfall is over \$18 million, or about 30% of the total required contribution for the three funds. The deficiency by fund is shown below:

<u>Fund</u>	<u>Deficiency</u>		
	<u>1988</u>	<u>1989</u>	<u>1990</u>
• Minneapolis Teachers	\$11,258,000	\$12,926,000	\$14,256,000
• St. Paul Teachers	3,298,000	4,284,000	3,851,000
• Duluth Teachers	<u>38,000</u>	<u>344,000</u>	<u>362,000</u>
• Total	\$14,594,000	\$17,554,000	\$18,469,000

Table 3
CONTRIBUTIONS FOR 1990 FISCAL YEAR
(In Thousands of Dollars)

<u>Plan</u>	<u>Statutory Contribution</u>	<u>Required Contribution</u>	<u>Sufficiency (Deficiency)</u>
Public Employees	\$180,407	\$170,603	\$ 9,804
State Employees	125,507	115,474	10,033
Teachers (Statewide)	257,423	235,918	21,505
Correctional Employees	5,709	4,564	1,145
State Patrol	8,930	7,119	1,811
PERA Police and Fire	39,597	32,086	7,511
Judges	4,781	4,558	223
Legislators	1,610	1,927	(317)
Elective State Officers	144	137	7
Minneapolis Employees	37,036	37,036	0
Minneapolis Teachers	21,489	35,745	(14,256)
St. Paul Teachers	16,353	20,204	(3,851)
Duluth Teachers	4,251	4,613	(362)
 Total	 \$703,237	 \$669,984	 \$33,253
 Prior Year Total	 625,726	 641,798	 (16,072)
 Change From Prior Year	 77,511	 28,186	 49,325
% Change	12%	4%	N/A

SECTION 7

REQUIRED PENSION PLAN CONTRIBUTIONS: 1989 VS. 1990

The following three graphs compare this year's required contributions to that calculated in the prior year. These contributions are expressed as a percentage of payroll.

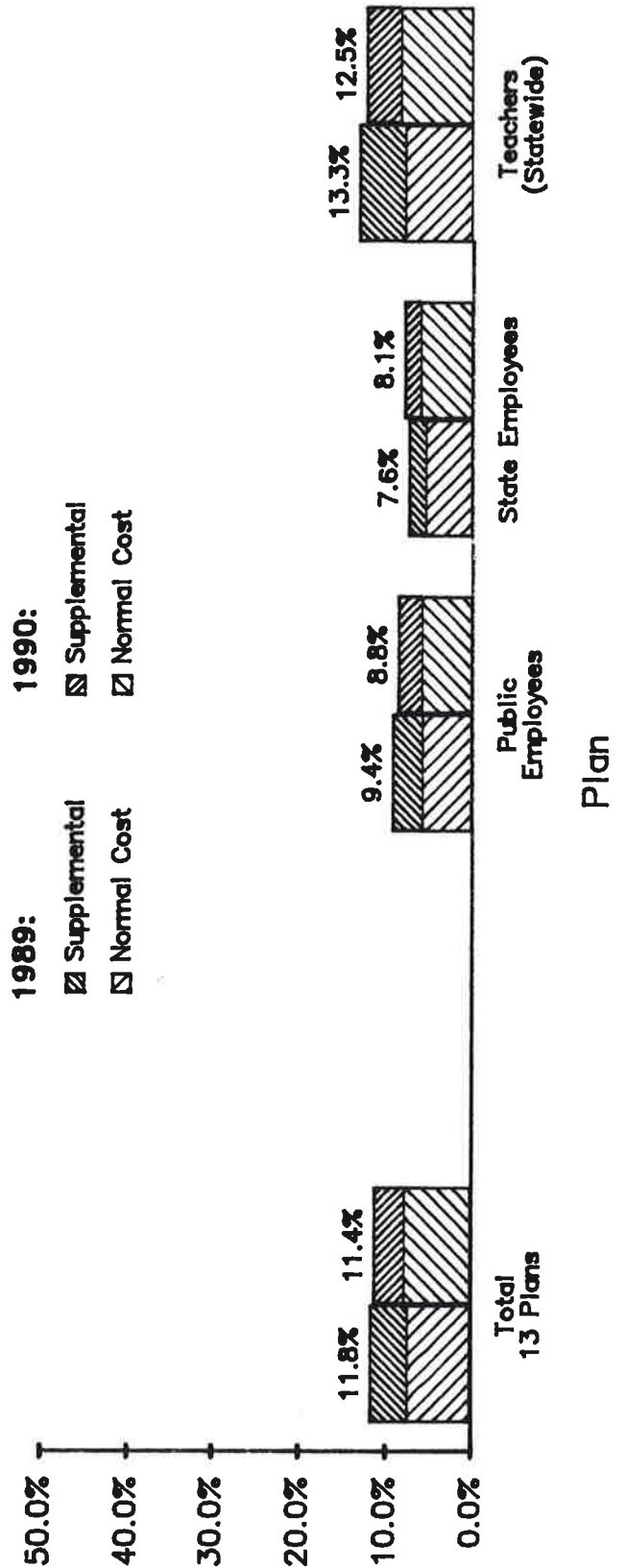
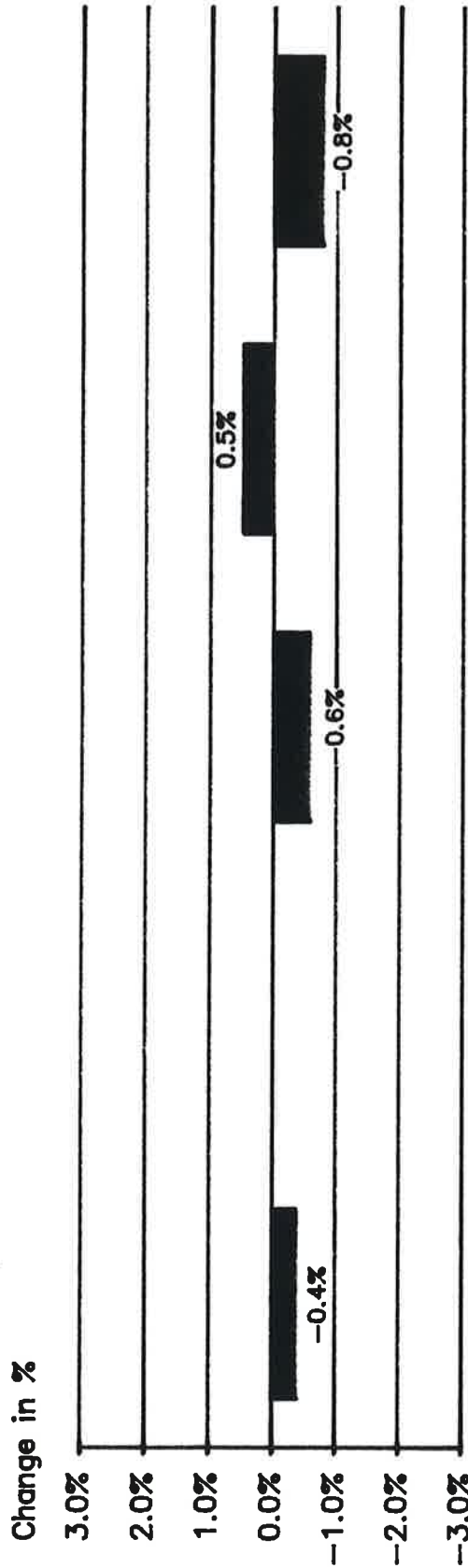
In aggregate, the required contributions have decreased from 11.8% of payroll to 11.4%. Changes in required contribution levels are attributable to:

- Experience gains and losses
- Benefit improvements
- Change in assumed interest rate from 8.0% to 8.5%
- Increase in amortization period to 2020

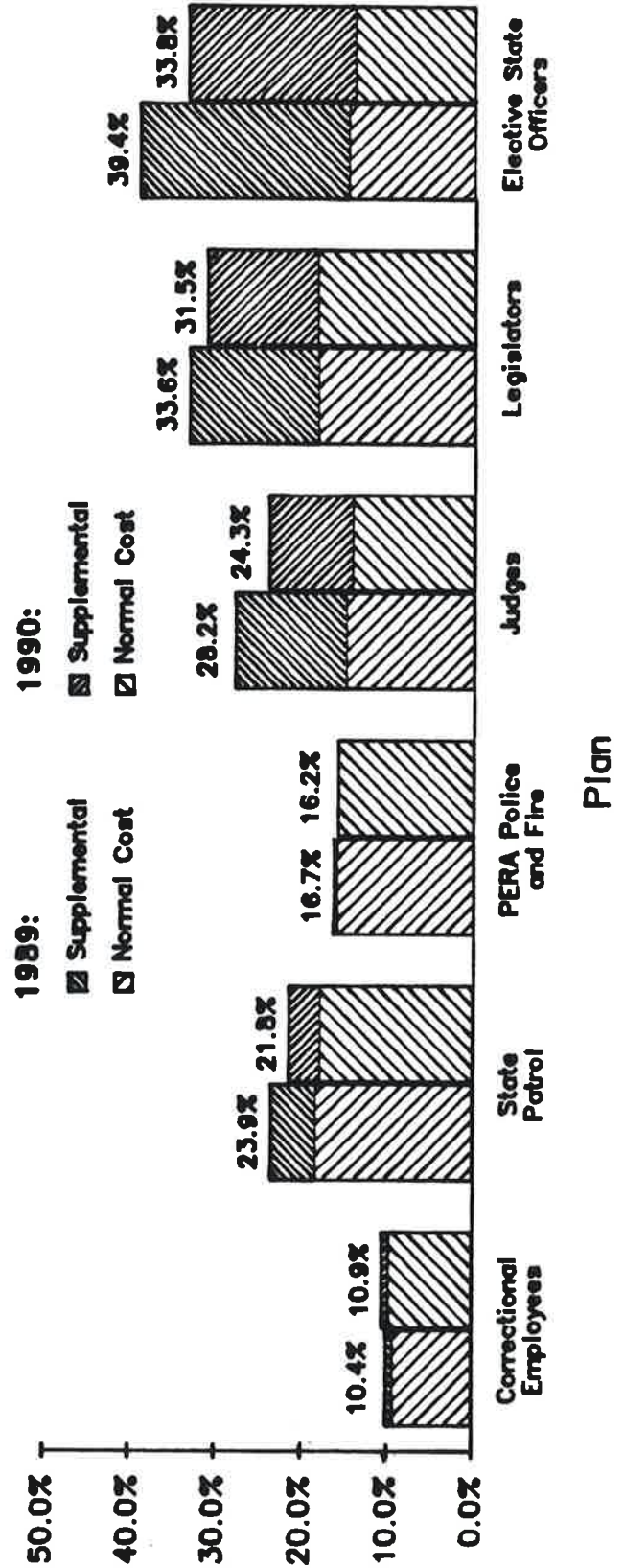
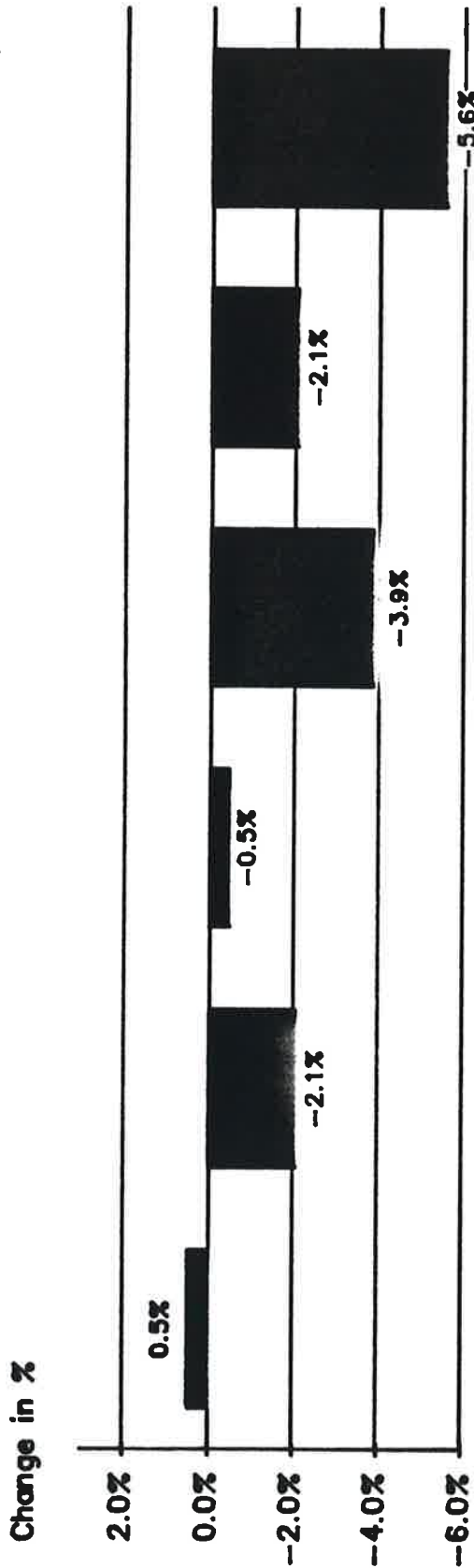
The net impact of experience gains and losses is favorable due to higher than expected return on assets.

Changes in benefits, interest assumptions and amortization period also produce a net reduction in recommended contribution rates as described in Section 11.

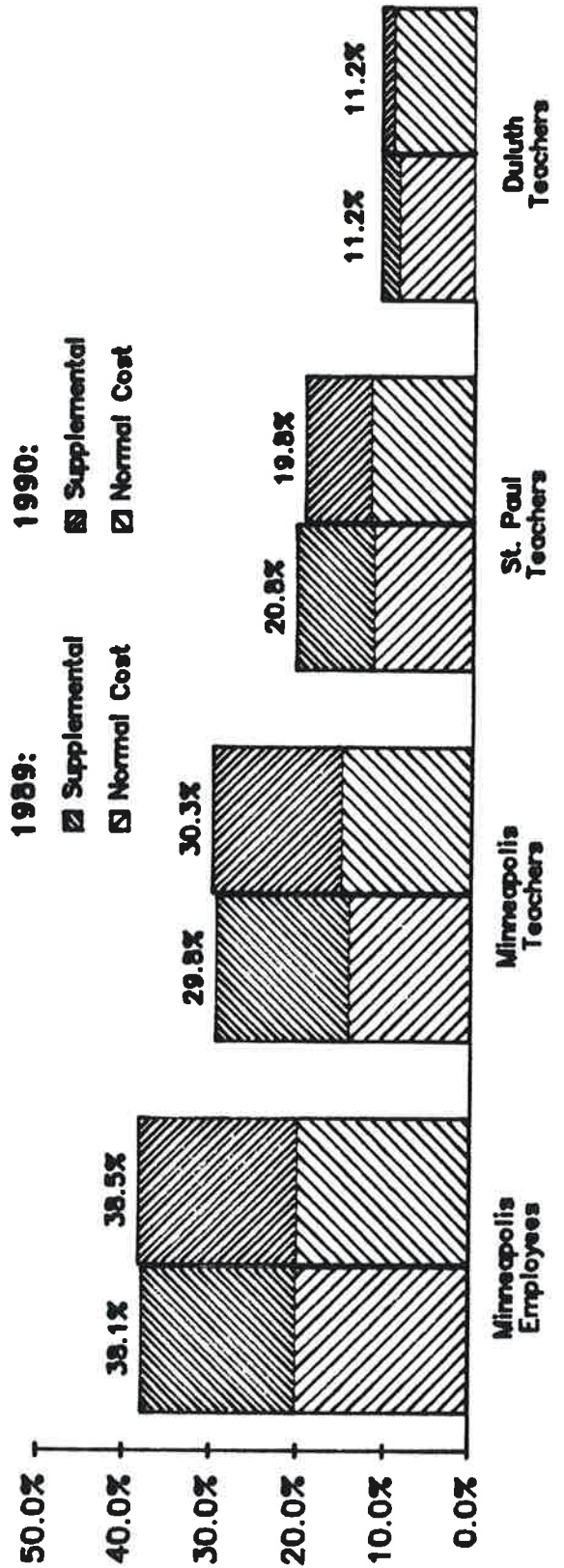
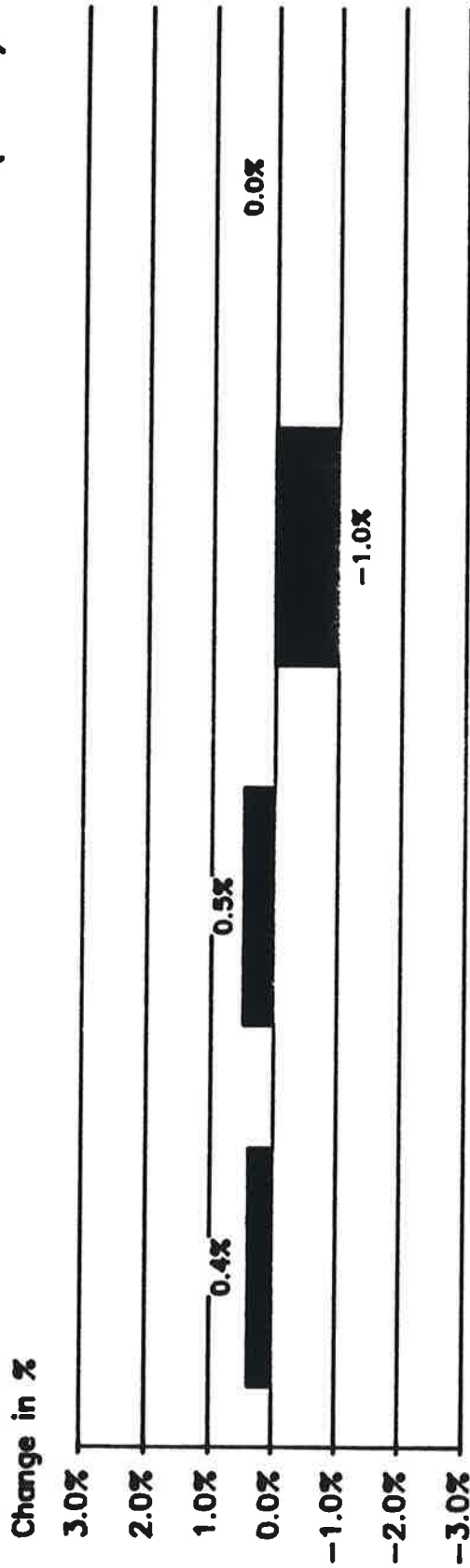
Required Pension Plan Contributions: 1989 vs. 1990



Required Pension Plan Contributions: 1989 vs. 1990 (cont)



Required Pension Plan Contributions: 1989 vs. 1990 (cont)



Plan

SECTION 8

ACCRUED LIABILITY FUNDING RATIOS: 1985 - 1989

These funding ratios represent a relationship determined on the date of actuarial valuation, July 1.

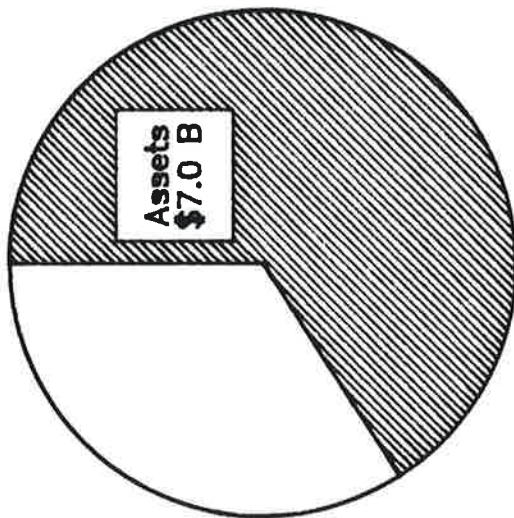
The accrued liability funding ratio is the traditional measurement that has been used in past years. It is the ratio of assets (the current asset value as defined by Statute and used in the actuarial valuations) to the actuarial accrued liability determined by the Entry Age Normal Actuarial Cost Method.

The total funding ratio for all 13 plans has increased over the five year period from 67% to 73%.

Initially, the 1989 ratio showed an increase from 72% in 1988 to 75%, but fell back to 73% after measuring the net impact of the benefit improvements contained in the 1989 legislation and the reduction in liabilities due to the higher interest rate assumption of 8.5%. See Section 11 for more details.

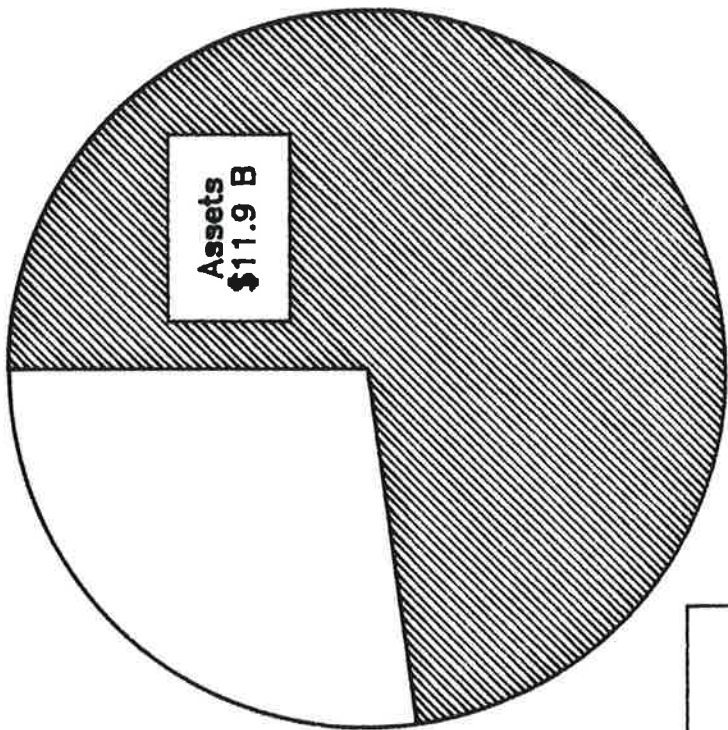
Total For All 13 Plans

Liabilities
\$10.6 B

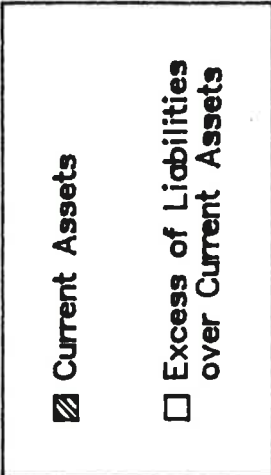


1985
Funding Ratio 67%

Liabilities
\$16.3 B

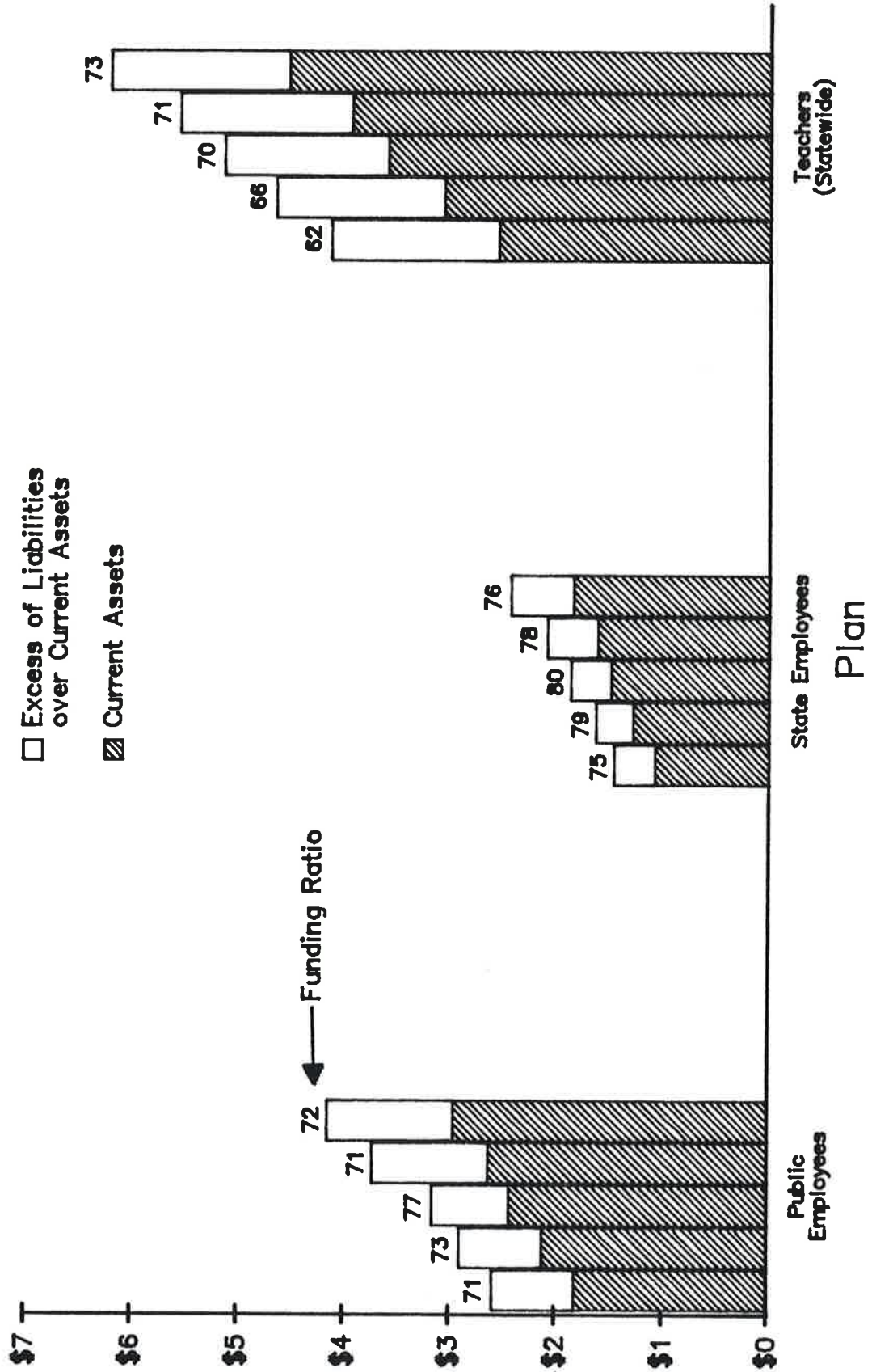


1989
Funding Ratio 73%



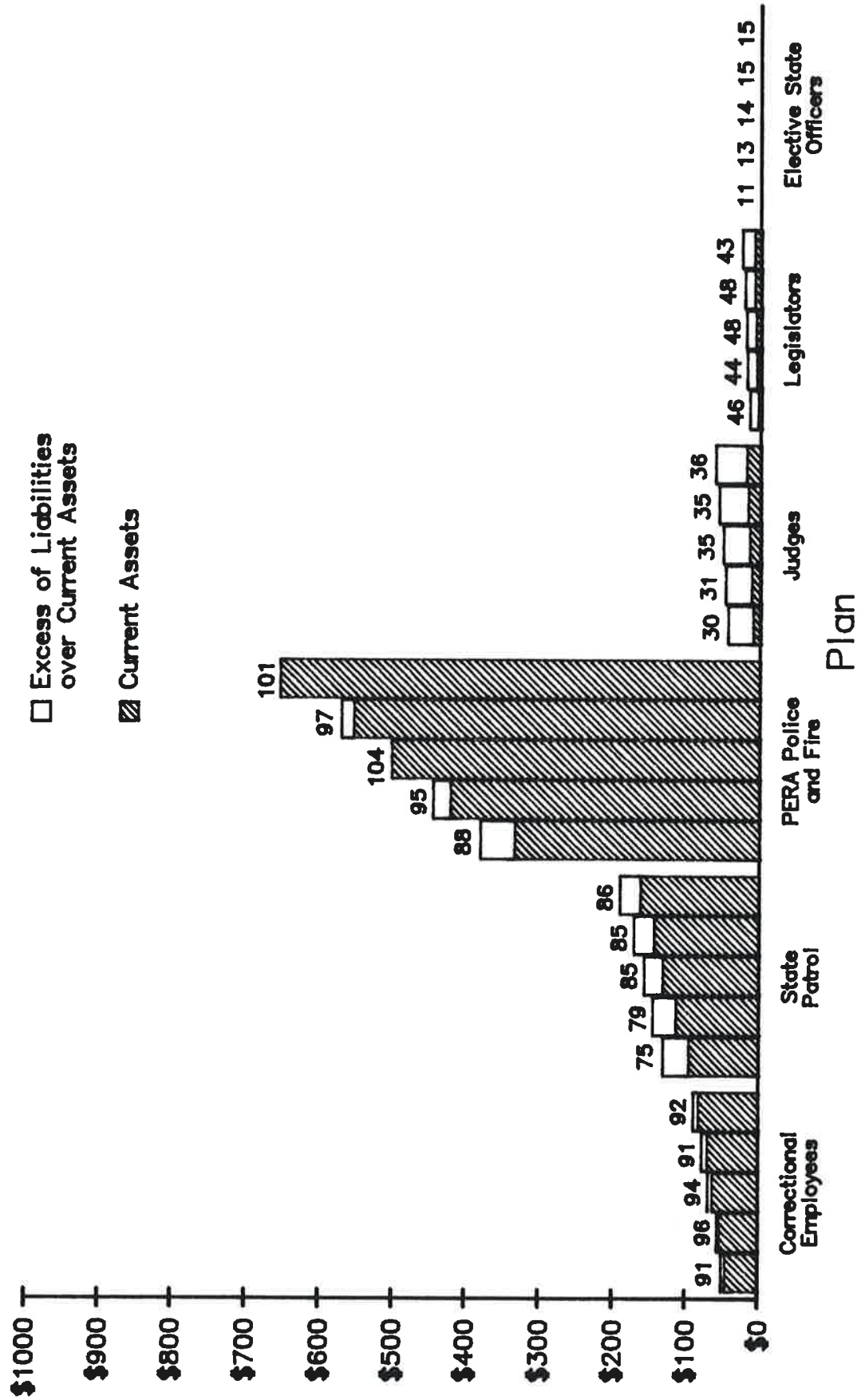
Accrued Liability Funding Ratios: 1985 - 1989

(In Billions of Dollars)



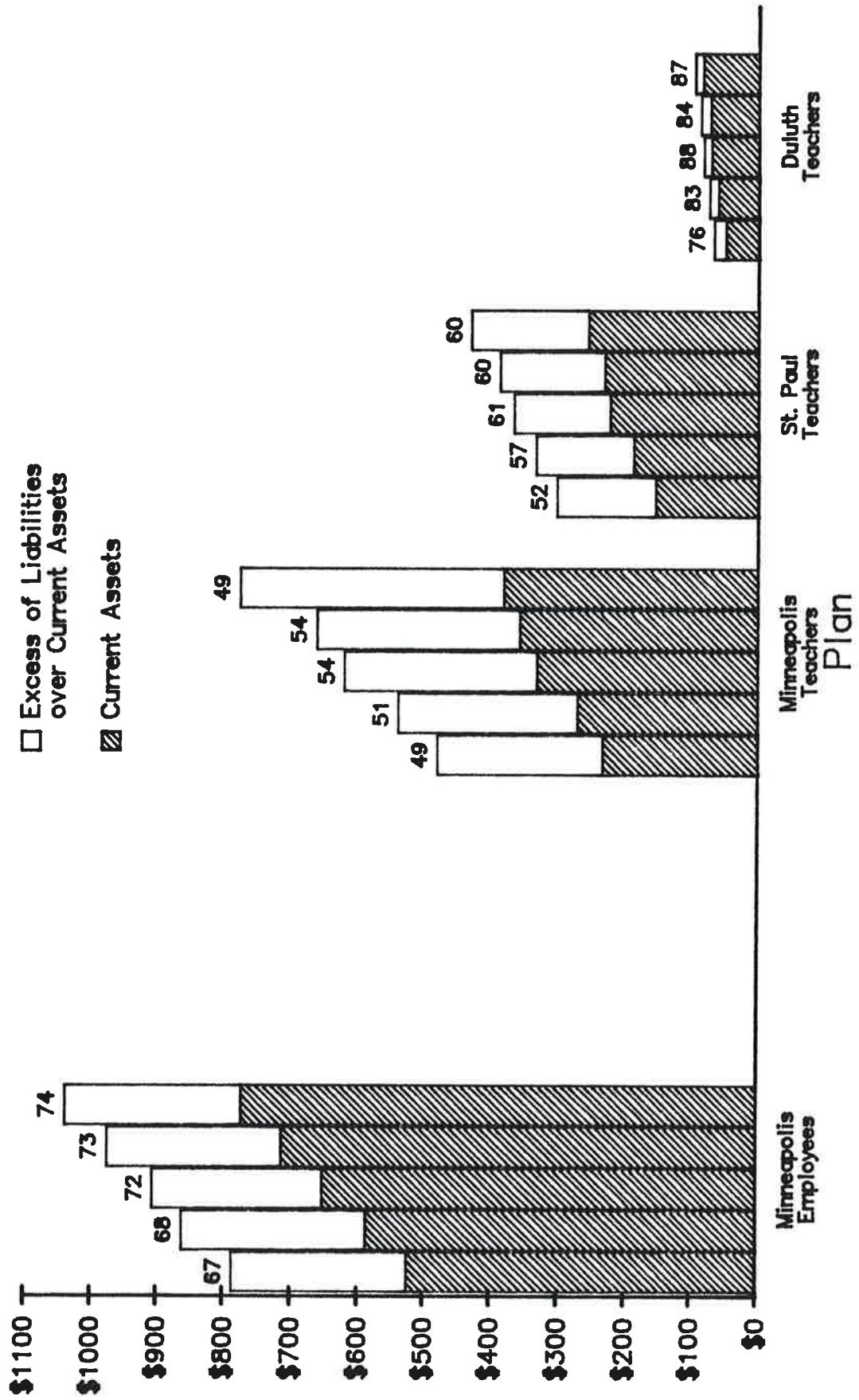
Accrued Liability Funding Ratios: 1985 - 1989 (cont)

(In Millions of Dollars)



Accrued Liability Funding Ratios: 1985 - 1989 (cont)

(In Millions of Dollars)



SECTION 9
ACTUARIAL LIABILITY SUMMARY

Table 4 on the following page shows the calculation of the funding ratios in the previous graphs.

Due to favorable investment performance, the value of current assets has grown by 13%, which is faster than the 12% growth in actuarial accrued liability. As a result, the unfunded has increased by 9%, compared to an increase of 18% the prior year.

Table 4
ACTUARIAL LIABILITY SUMMARY
AS OF JULY 1, 1989
(In Thousands of Dollars)

<u>Plan</u>	<u>Actuarial Accrued Liability</u> (1)	<u>Current Assets</u> (2)	<u>Unfunded</u> (3) = (1) - (2)	<u>Funding Ratio</u> (2)/(1)
Public Employees	\$ 4,175,240	\$ 2,992,285	\$ 1,182,955	71.67%
State Employees	2,456,686	1,871,542	585,144	76.18%
Teachers (Statewide)	6,249,413	4,567,997	1,681,416	73.09%
Correctional Employees	92,684	85,441	7,243	92.19%
State Patrol	194,434	167,271	27,163	86.03%
PERA Police and Fire	651,776	656,654	(4,878)	100.75%
Judges	64,854	23,352	41,502	36.01%
Legislators	28,821	12,317	16,504	42.74%
Elective State Officers	2,101	315	1,786	14.99%
Minneapolis Employees	1,042,847	776,522	266,325	74.46%
Minneapolis Teachers	781,132	385,146	395,986	49.31%
St. Paul Teachers	434,587	260,402	174,185	59.92%
Duluth Teachers	99,899	86,539	13,360	86.63%
 Total	 \$16,274,474	 \$11,885,783	 \$4,388,691	 73.03%
 Prior Year Total	 14,504,292	 10,483,124	 4,021,168	 72.28%
 Change From Prior Year	 1,770,182	 1,402,659	 367,523	 0.75%
% Change	12%	13%	9%	N/A

SECTION 10
CASH FLOW PROJECTION SUMMARY

The actuarial reports project statutory contributions, disbursements and the assumed investment return to the year 2020.

Table 5 summarizes the results of that projection by showing assets at the beginning and at the end of the projection period.

Assets for purposes of this projection represent the current assets. However, for those plans that participate in a post retirement fund, the current assets are exclusive of assets that will be transferred to either MPRIF or MERF's Retirement Benefit Fund.

The only plans projected to have fewer assets in the future are MERF and Minneapolis Teachers. A smaller MERF Fund is to be expected because there are no new entrants to this closed Fund. However, the projection for Minneapolis Teachers reflects the large deficiencies in contributions.

Table 5
CASH FLOW PROJECTION SUMMARY
(In Thousands of Dollars)

Plan	Current Assets	
	1989	2020
Public Employees	\$1,386,993*	\$13,001,439*
State Employees	1,169,553*	12,358,157*
Teachers (Statewide)	2,748,693*	27,018,941*
Correctional Employees	57,077*	1,145,444*
State Patrol	88,808*	206,235*
PERA Police and Fire	497,089*	7,372,451*
Judges	3,183*	145,787*
Legislators	3,550*	17,700*
Elective State Officers	315	3,712
Minneapolis Employees	243,245**	13,079**
Minneapolis Teachers	385,146	(1,416,817)
St. Paul Teachers	260,402	384,852
Duluth Teachers	86,539	572,029
 Total	 \$6,930,593	 \$60,823,009

* Excluding Minnesota Post Retirement Investment Fund Assets

** Excluding Retirement Benefit Fund Assets

SECTION 11
MAJOR PENSION LEGISLATION IN 1989

Major pension legislation was passed in 1989 which improved benefits, increased the assumed interest rate, extended the period for amortizing unfunded liabilities and increased the statutory contributions for two statewide plans. This legislation affected 12 of the 13 plans reviewed in this report. The graphs in this section do not include MERF, which was the excluded fund.

Benefit Improvements

Benefit improvements were adopted which had a value of \$1.16 billion with \$.78 billion of that amount attributable to prior service.

The benefit improvements covered a wide array of plan features. Some benefit improvements are the same for all 12 plans, but others are not. A more detailed write up of each plan's benefit changes may be found in the 1989 Actuarial Valuation report for that plan.

The most important benefit changes are:

- A Level Benefit Accrual Rate

Current members are provided an alternative benefit formula based on a level accrual rate. New members will accrue benefits only under this new level formula. For example, the accrual rate for Coordinated benefits is 1.5% per year rather than 1.0% for the first ten years and 1.5% for subsequent years.

- Early Retirement Reductions

The old formula is improved by permitting retirement under the Rule of 90. The new level benefit formula is enhanced by adding 3% per year augmentation up to normal retirement age before applying actuarial equivalence factors.

- Eligibility Requirements for Benefits

The eligibility requirement for most benefits is reduced from five years to three years.

- Augmentation of Deferred Annuities

The augmentation is increased from 3% per year to 5% per year once the deferral extends beyond age 55.

- Interest on Member Refunds

Members receiving refunds of their contributions will be credited with 6% interest rather than 5%.

- Joint and Survivor Bounce Back Option

Retirees receiving benefits under a joint and survivor option will have their benefits "bounce back" to the life annuity level upon the death of their spouse without incurring any additional cost for this added death benefit.

- Variable Annuity Eliminated

The variable annuity provided in the Teachers Retirement Association Plan is eliminated and replaced by a full formula benefit.

Assumed Interest Rate

The interest rate was changed from 8.0% to 8.5%, but the assumed interest rate on MPRIF remains at 5.0%. Therefore, for funds participating in MPRIF the interest rate change only affects the assumed rate prior to retirement. In the case of the three First Class Teacher Funds, the change in interest rate affects both pre and post retirement.

The interest rate change eliminated 74% of the \$1.16 billion increase in liability and 50% of the \$.78 billion increase in liability allocated to past service.

Amortization Period

The change in amortization date to the year 2020 reduces the annual supplemental contribution that is used to amortize the unfunded actuarial accrued liability. The change in amortization period does not affect the amount of actuarial accrued liability as did the benefit improvements and the assumed interest rate change.

Statutory Contributions

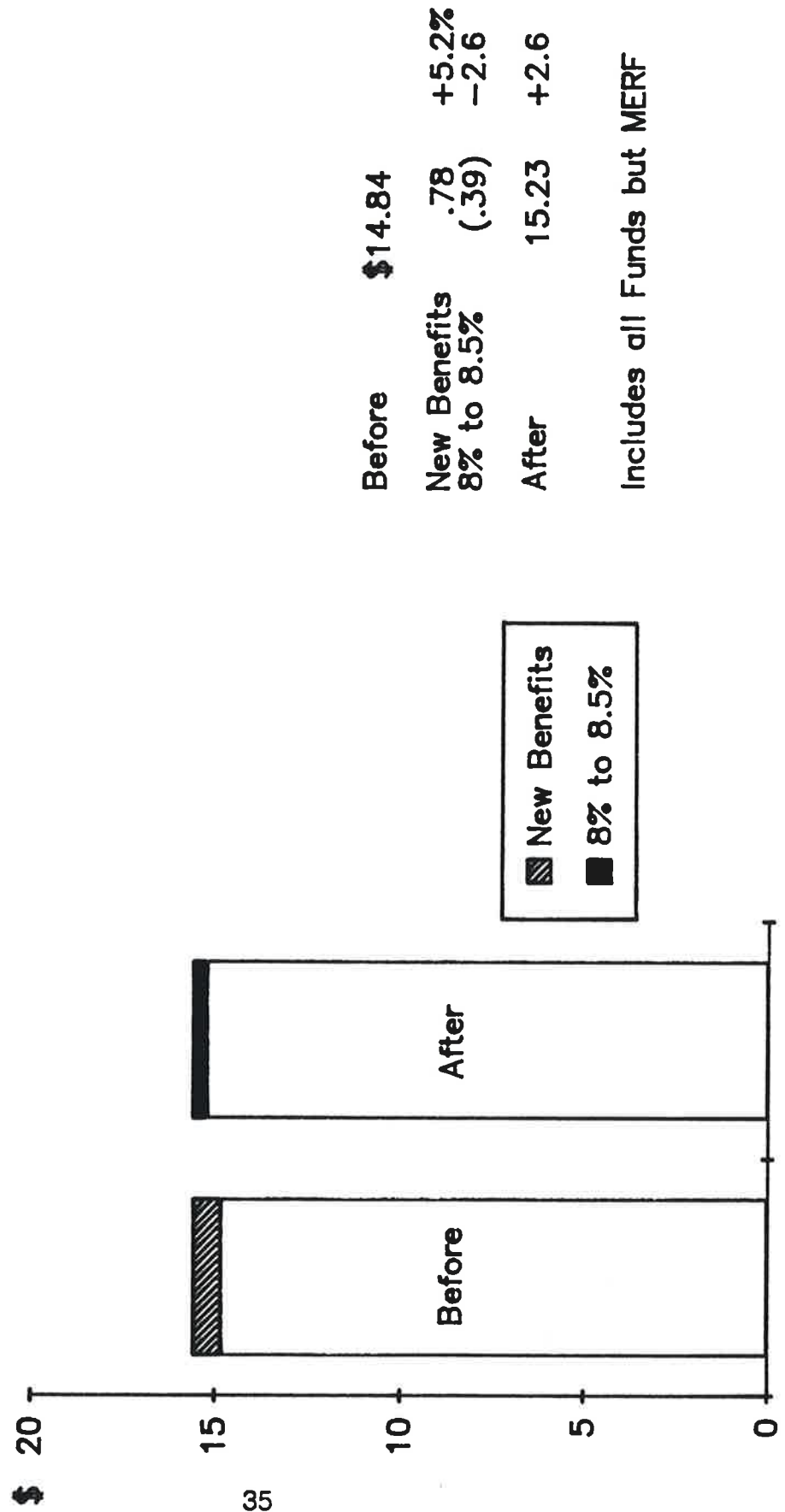
The statutory contributions were increased for two statewide plans. The Public Employees contribution was increased by 0.46% of payroll and the State Employees by 1.22% of payroll. In both cases, the increase was shared equally by members and employers.

Effect of 1989 Legislation

The following graphs show that the net impact of the legislation on the 12 affected plans increased the actuarial accrued liability by \$.39 billion or 2.6% and decreased the required contributions by \$13 million or 2.1%.

The final two pages in the Appendix summarize the effect of the 1989 pension legislation for each of the 12 plans.

Effect of 1989 Legislation on Actuarial Accrued Liability (In Billions of Dollars)



Effect of 1989 Legislation on Required Contributions (In Millions of Dollars)

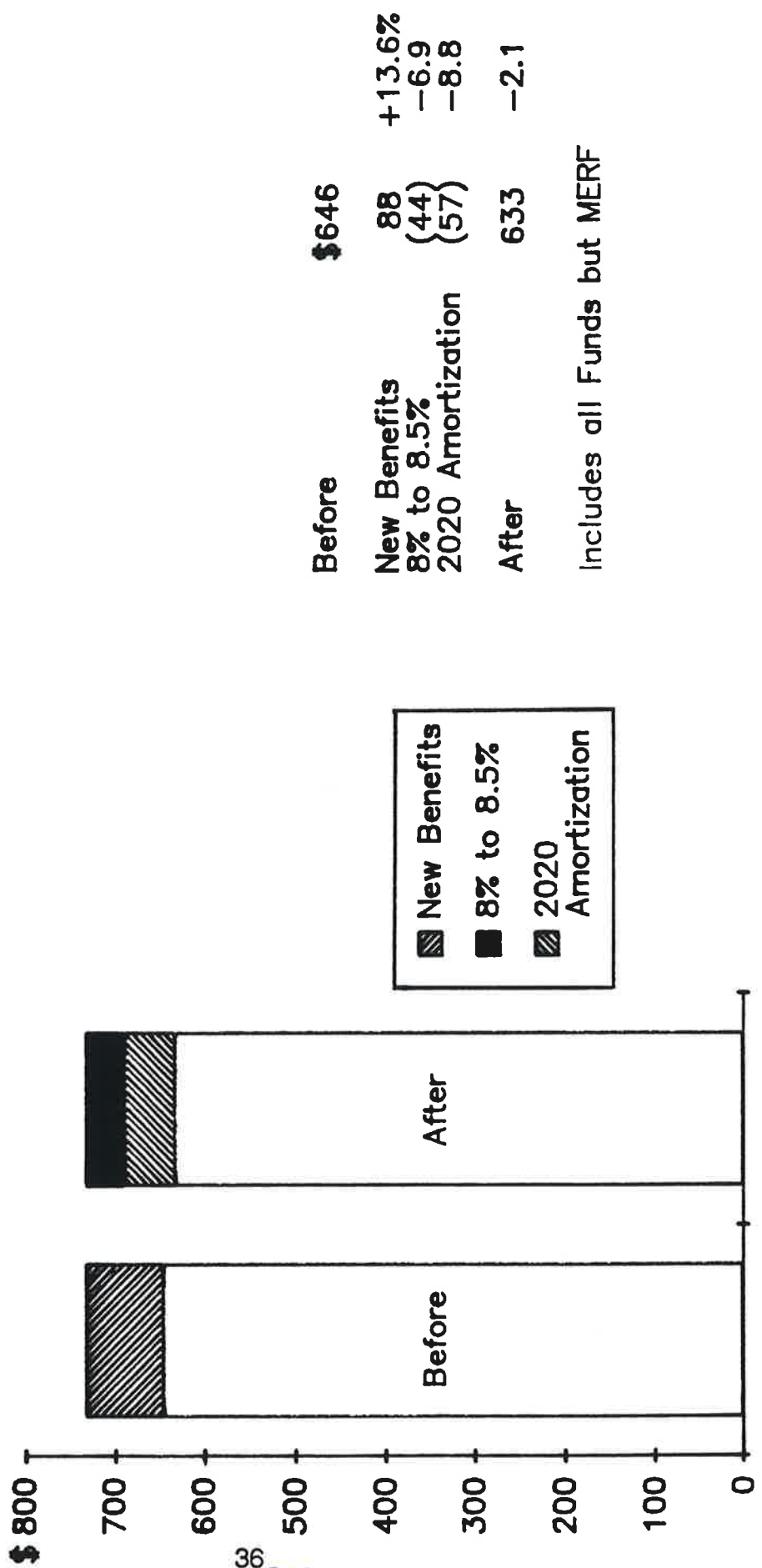


Table 6

EFFECT OF 1989 LEGISLATION
(In Millions of Dollars)

	<u>Public Employees</u>	<u>State Employees</u>	<u>Teachers (Statewide)</u>
<u>Actuarial Accrued Liability</u>			
Before	\$4,133	\$2,299	\$6,100
Benefit Improvements	141	231	288
Interest - 8% to 8.5%	(99)	(73)	(139)
After	4,175	2,457	6,249
<u>Required Contribution</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>
Before	180	105	244
Benefit Improvements	17	25	35
Interest - 8% to 8.5%	(10)	(9)	(17)
Amortization Date to 2020	(16)	(6)	(26)
After	171	115	236
	<u>% Pay</u>	<u>% Pay</u>	<u>% Pay</u>
Before	9.31	7.42	12.93
Benefit Improvements	0.86	1.73	1.89
Interest - 8% to 8.5%	(0.51)	(0.62)	(0.90)
Amortization Date to 2020	(0.83)	(0.39)	(1.40)
After	8.83	8.14	12.52

APPENDIX-HIGHLIGHTS

PUBLIC EMPLOYEES RETIREMENT FUND

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88 VALUATION</u>	<u>07/01/89 VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 353 % of Payroll	8.94%	9.33%
2. Required Contributions - Chapter 356 % of Payroll	9.42%	8.83%
3. Sufficiency (Deficiency) (A1-A2)	-0.48%	0.50%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$2,657,038	\$2,992,285
b. Current Benefit Obligations (Table 8)	\$3,334,423	\$3,714,257
c. Funding Ratio (a/b)	79.69%	80.56%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$2,657,038	\$2,992,285
b. Actuarial Accrued Liability (Table 9)	\$3,755,608	\$4,175,240
c. Funding Ratio (a/b)	70.75%	71.67%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$4,363,206	\$5,228,236
b. Current and Expected Future Benefit Obligations	\$4,517,759	\$5,008,731
c. Funding Ratio (a/b)	96.58%	104.38%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	95,224	99,515
b. Projected Annual Earnings	\$1,767,041	\$1,932,674
c. Average Annual Earnings (Actual \$)	\$18,557	\$19,421
d. Average Age	42.3	42.5
e. Average Service	8.1	8.2
2. Others		
a. Service Retirements (Table 4)	21,882	22,932
b. Disability Retirements (Table 5)	650	689
c. Survivors (Table 6)	4,168	4,251
d. Deferred Retirements (Table 7)	2,094	2,349
e. Terminated Other Non-vested (Table 7)	6,621	6,805
f. Total	35,415	37,026

STATE EMPLOYEES RETIREMENT FUND

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88</u> <u>VALUATION</u>	<u>07/01/89</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 352 % of Payroll	7.63%	8.85%
2. Required Contributions - Chapter 356 % of Payroll	7.61%	8.14%
3. Sufficiency (Deficiency) (A1-A2)	0.02%	0.71%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 2)	\$1,644,145	\$1,871,542
b. Current Benefit Obligations (Table 8)	\$1,775,445	\$2,109,272
c. Funding Ratio (a/b)	92.60%	88.73%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 2)	\$1,644,145	\$1,871,542
b. Actuarial Accrued Liability (Table 9)	\$2,115,476	\$2,456,686
c. Funding Ratio (a/b)	77.72%	76.18%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$2,824,501	\$3,467,695
b. Current and Expected Future Benefit Obligations	\$2,820,611	\$3,239,884
c. Funding Ratio (a/b)	100.14%	107.03%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	47,040	48,653
b. Projected Annual Earnings	\$1,316,671	\$1,418,160
c. Average Annual Earnings (Actual \$)	\$27,990	\$29,148
d. Average Age	40.2	40.5
e. Average Service	9.3	9.4
2. Others		
a. Service Retirements (Table 4)	11,455	11,564
b. Disability Retirements (Table 5)	669	665
c. Survivors (Table 6)	753	850
d. Deferred Retirements (Table 7)	1,162	1,355
e. Terminated Other Non-vested (Table 7)	4,084	3,924
f. Total	18,123	18,358

TEACHERS RETIREMENT ASSOCIATION FUND

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88 VALUATION</u>	<u>07/01/89 VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 354 % of Payroll	13.69%	13.66%
2. Required Contributions - Chapter 356 % of Payroll	13.29%	12.52%
3. Sufficiency (Deficiency) (A1-A2)	0.40%	1.14%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$3,978,898 *	\$4,567,997
b. Current Benefit Obligations (Table 8)	\$4,849,460 *	\$5,549,423
c. Funding Ratio (a/b)	82.05%	82.31%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$3,978,898 *	\$4,567,997
b. Actuarial Accrued Liability (Table 9)	\$5,586,441 *	\$6,249,413
c. Funding Ratio (a/b)	71.22%	73.09%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$7,205,992 *	\$8,297,596
b. Current and Expected Future Benefit Obligations	\$7,082,622 *	\$7,810,362
c. Funding Ratio (a/b)	101.74%	106.24%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	63,326	64,796
b. Projected Annual Earnings	\$1,752,322	\$1,884,073
c. Average Annual Earnings (Actual \$)	\$27,671	\$29,077
d. Average Age	42.1	42.4
e. Average Service	11.6	11.9
2. Others		
a. Service Retirements (Table 4)	14,974	15,406
b. Disability Retirements (Table 5)	221	241
c. Survivors (Table 6)	869	903
d. Deferred Retirements (Table 7)	1,878	1,887
e. Terminated Other Non-vested (Table 7)	13,310	14,205
f. Total	31,252	32,642

* Includes Variable Annuity Fund of \$172,659 in 1988.

CORRECTIONAL EMPLOYEES RETIREMENT FUND

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88</u> <u>VALUATION</u>	<u>07/01/89</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 352 % of Payroll	13.60%	13.60%
2. Required Contributions - Chapter 356 % of Payroll	10.37%	10.87%
3. Sufficiency (Deficiency) (A1-A2)	3.23%	2.73%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 2)	\$74,065	\$85,441
b. Current Benefit Obligations (Table 8)	\$69,142	\$79,143
c. Funding Ratio (a/b)	107.12%	107.96%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 2)	\$74,065	\$85,441
b. Actuarial Accrued Liability (Table 9)	\$81,454	\$92,684
c. Funding Ratio (a/b)	90.93%	92.19%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$143,306	\$154,739
b. Current and Expected Future Benefit Obligations	\$114,417	\$128,657
c. Funding Ratio (a/b)	125.25%	120.27%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	1,267	1,317
b. Projected Annual Earnings	\$38,807	\$41,976
c. Average Annual Earnings (Actual \$)	\$30,629	\$31,872
d. Average Age	37.4	37.6
e. Average Service	8.0	8.2
2. Others		
a. Service Retirements (Table 4)	328	337
b. Disability Retirements (Table 5)	6	8
c. Survivors (Table 6)	12	12
d. Deferred Retirements (Table 7)	47	58
e. Terminated Other Non-vested (Table 7)	80	57
f. Total	473	472

STATE PATROL RETIREMENT FUND

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88</u> <u>VALUATION</u>	<u>07/01/89</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 352B % of Payroll	27.40%	27.40%
2. Required Contributions - Chapter 356 % of Payroll	23.87%	21.84%
3. Sufficiency (Deficiency) (A1-A2)	3.53%	5.56%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$148,355	\$167,271
b. Current Benefit Obligations (Table 8)	\$167,349	\$184,250
c. Funding Ratio (a/b)	88.65%	90.78%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$148,355	\$167,271
b. Actuarial Accrued Liability (Table 9)	\$175,062	\$194,434
c. Funding Ratio (a/b)	84.74%	86.03%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$259,582	\$304,877
b. Current and Expected Future Benefit Obligations	\$241,433	\$263,684
c. Funding Ratio (a/b)	107.52%	115.62%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	740	765
b. Projected Annual Earnings	\$29,267	\$32,591
c. Average Annual Earnings (Actual \$)	\$39,550	\$42,603
d. Average Age	40.6	40.7
e. Average Service	14.0	14.0
2. Others		
a. Service Retirements (Table 4)	339	340
b. Disability Retirements (Table 5)	13	14
c. Survivors (Table 6)	103	101
d. Deferred Retirements (Table 7)	16	19
e. Terminated Other Non-vested (Table 7)	8	7
f. Total	479	481

PUBLIC EMPLOYEES POLICE AND FIRE FUND

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88</u> <u>VALUATION</u>	<u>07/01/89</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 353 % of Payroll	20.00%	20.00%
2. Required Contributions - Chapter 356 % of Payroll	16.69%	16.21%
3. Sufficiency (Deficiency) (A1-A2)	3.31%	3.79%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$557,669	\$656,654
b. Current Benefit Obligations (Table 8)	\$512,921	\$582,299
c. Funding Ratio (a/b)	108.72%	112.77%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$557,669	\$656,654
b. Actuarial Accrued Liability (Table 9)	\$574,133	\$651,776
c. Funding Ratio (a/b)	97.13%	100.75%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$1,077,023	\$1,211,268
b. Current and Expected Future Benefit Obligations	\$936,934	\$1,035,701
c. Funding Ratio (a/b)	114.95%	116.95%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	5,611	5,891
b. Projected Annual Earnings	\$178,768	\$197,982
c. Average Annual Earnings (Actual \$)	\$31,860	\$33,608
d. Average Age	37.3	37.5
e. Average Service	9.8	10.0
2. Others		
a. Service Retirements (Table 4)	965	995
b. Disability Retirements (Table 5)	73	84
c. Survivors (Table 6)	325	333
d. Deferred Retirements (Table 7)	105	110
e. Terminated Other Non-vested (Table 7)	107	100
f. Total	1,575	1,622

JUDGES RETIREMENT FUND

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88</u> <u>VALUATION</u>	<u>07/01/89</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 490 % of Payroll	26.05% *	25.49%
2. Required Contributions - Chapter 356 % of Payroll	28.24%	24.30%
3. Sufficiency (Deficiency) (A1-A2)	-2.19% *	1.19%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$20,760	\$23,352
b. Current Benefit Obligations (Table 8)	\$59,389	\$64,106
c. Funding Ratio (a/b)	34.96%	36.43%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$20,760	\$23,352
b. Actuarial Accrued Liability (Table 9)	\$59,708	\$64,854
c. Funding Ratio (a/b)	34.77%	36.01%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$82,262 *	\$98,870
b. Current and Expected Future Benefit Obligations	\$88,854	\$93,774
c. Funding Ratio (a/b)	92.58% *	105.43%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	246	257
b. Projected Annual Earnings	\$17,109	\$18,759
c. Average Annual Earnings (Actual \$)	\$69,548	\$72,992
d. Average Age	53.2	53.6
e. Average Service	11.2	11.3
2. Others		
a. Service Retirements (Table 4)	93	95
b. Disability Retirements (Table 5)	5	8
c. Survivors (Table 6)	63	63
d. Deferred Retirements (Table 7)	5	4
e. Terminated Other Non-vested (Table 7)	0	0
f. Total	166	170

* Restated to recognize employer statutory contributions.

LEGISLATORS RETIREMENT PLAN

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88</u> <u>VALUATION</u>	<u>07/01/89</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 3A % of Payroll	25.06% *	26.34%
2. Required Contributions - Chapter 356 % of Payroll	33.58%	31.52%
3. Sufficiency (Deficiency) (A1-A2)	-8.52% *	-5.18%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$11,857	\$12,317
b. Current Benefit Obligations (Table 8)	\$23,758	\$26,998
c. Funding Ratio (a/b)	49.91%	45.62%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$11,857	\$12,317
b. Actuarial Accrued Liability (Table 9)	\$24,882	\$28,821
c. Funding Ratio (a/b)	47.65%	42.74%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$25,730 *	\$32,712
b. Current and Expected Future Benefit Obligations	\$33,120	\$39,361
c. Funding Ratio (a/b)	77.69% *	83.11%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	201	201
b. Projected Annual Earnings	\$4,932	\$6,114
c. Average Annual Earnings (Actual \$)	\$24,540	\$30,416
d. Average Age	47.8	48.4
e. Average Service	7.3	7.7
2. Others		
a. Service Retirements (Table 4)	125	125
b. Disability Retirements (Table 5)	NA	NA
c. Survivors (Table 6)	44	36
d. Deferred Retirements (Table 7)	97	95
e. Terminated Other Non-vested (Table 7)	17	16
f. Total	283	272

* Restated to recognize employer statutory contribution.

ELECTIVE STATE OFFICERS RETIREMENT PLAN

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88</u> <u>VALUATION</u>	<u>07/01/89</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 352C % of Payroll	34.91% *	35.35%
2. Required Contributions - Chapter 356 % of Payroll	39.43%	33.75%
3. Sufficiency (Deficiency) (A1-A2)	-4.52% *	1.60%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$281	\$315
b. Current Benefit Obligations (Table 8)	\$1,757	\$1,938
c. Funding Ratio (a/b)	15.99%	16.25%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$281	\$315
b. Actuarial Accrued Liability (Table 9)	\$1,929	\$2,101
c. Funding Ratio (a/b)	14.57%	14.99%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$2,004 *	\$2,577
b. Current and Expected Future Benefit Obligations	\$2,311	\$2,430
c. Funding Ratio (a/b)	86.72% *	106.05%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	6	6
b. Projected Annual Earnings	\$386	\$406
c. Average Annual Earnings (Actual \$)	\$64,399	\$67,618
d. Average Age	50.1	51.1
e. Average Service	8.2	9.2
2. Others		
a. Service Retirements (Table 4)	3	3
b. Disability Retirements (Table 5)	NA	NA
c. Survivors (Table 6)	5	5
d. Deferred Retirements (Table 7)	5	6
e. Terminated Other Non-vested (Table 7)	1	0
f. Total	14	14

* Restated to recognize employer statutory contributions.

MINNEAPOLIS EMPLOYEES RETIREMENT FUND

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88</u> <u>VALUATION</u>	<u>07/01/89</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 422A % of Payroll	38.14%	38.51%
2. Required Contributions - Chapter 356 % of Payroll	38.14%	38.51%
3. Sufficiency (Deficiency) (A1-A2)	0.00%	0.00%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$716,780	\$776,522
b. Current Benefit Obligations (Table 8)	\$944,313	\$1,005,397
c. Funding Ratio (a/b)	75.90%	77.24%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$716,780	\$776,522
b. Actuarial Accrued Liability (Table 9)	\$979,146	\$1,042,847
c. Funding Ratio (a/b)	73.20%	74.46%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$1,164,886	\$1,223,740
b. Current and Expected Future Benefit Obligations	\$1,164,886	\$1,223,740
c. Funding Ratio (a/b)	100.00%	100.00%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	3,084	2,905
b. Projected Annual Earnings	\$95,637	\$96,171
c. Average Annual Earnings (Actual \$)	\$31,011	\$33,105
d. Average Age	48.0	48.4
e. Average Service	17.2	18.2
2. Others		
a. Service Retirements (Table 4)	3,676	3,687
b. Disability Retirements (Table 5)	267	265
c. Survivors (Table 6)	948	945
d. Deferred Retirements (Table 7)	95	96
e. Terminated Other Non-vested (Table 7)	196	195
f. Total	5,182	5,188

MINNEAPOLIS TEACHERS' RETIREMENT FUND

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88</u> <u>VALUATION</u>	<u>07/01/89</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 354A % of Payroll	18.43%	18.21%
2. Required Contributions - Chapter 356 % of Payroll	29.76%	30.28%
3. Sufficiency (Deficiency) (A1-A2)	-11.33%	-12.07%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$360,814	\$385,146
b. Current Benefit Obligations (Table 8)	\$628,003	\$729,935
c. Funding Ratio (a/b)	57.45%	52.76%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$360,814	\$385,146
b. Actuarial Accrued Liability (Table 9)	\$667,343	\$781,132
c. Funding Ratio (a/b)	54.07%	49.31%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$586,116	\$604,871
b. Current and Expected Future Benefit Obligations	\$813,417	\$928,897
c. Funding Ratio (a/b)	72.06%	65.12%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	3,188	3,164
b. Projected Annual Earnings	\$114,118	\$118,036
c. Average Annual Earnings (Actual \$)	\$35,796	\$37,306
d. Average Age	44.6	45.0
e. Average Service	14.0	14.3
f. Additional Members on Leave	220	334
2. Others		
a. Service Retirements (Table 4)	2,153	2,171
b. Disability Retirements (Table 5)	40	38
c. Survivors (Table 6)	211	197
d. Deferred Retirements (Table 7)	555	525
e. Terminated Other Non-vested (Table 7)	132	139
f. Total	3,091	3,070

ST. PAUL TEACHERS' RETIREMENT FUND

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88</u> <u>VALUATION</u>	<u>07/01/89</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 354A % of Payroll	16.34%	15.98%
2. Required Contributions - Chapter 356 % of Payroll	20.84%	19.75%
3. Sufficiency (Deficiency) (A1-A2)	-4.50%	-3.77%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$236,183	\$260,402
b. Current Benefit Obligations (Table 8)	\$360,506	\$405,654
c. Funding Ratio (a/b)	65.51%	64.19%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$236,183	\$260,402
b. Actuarial Accrued Liability (Table 9)	\$392,351	\$434,587
c. Funding Ratio (a/b)	60.20%	59.92%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$427,217	\$460,041
b. Current and Expected Future Benefit Obligations	\$505,722	\$547,666
c. Funding Ratio (a/b)	84.48%	84.00%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	3,280	3,312
b. Projected Annual Earnings	\$95,390	\$102,290
c. Average Annual Earnings (Actual \$)	\$29,082	\$30,885
d. Average Age	42.7	43.0
e. Average Service	10.8	11.1
f. Additional Members on Leave of Absence	117	124
2. Others		
a. Service Retirements (Table 4)	1,064	1,080
b. Disability Retirements (Table 5)	30	30
c. Survivors (Table 6)	116	126
d. Deferred Retirements (Table 7)	36	36
e. Terminated Other Non-vested (Table 7)	1,056	1,186
f. Total	2,302	2,458

DULUTH TEACHERS' RETIREMENT FUND

**REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)**

	<u>07/01/88</u> <u>VALUATION</u>	<u>07/01/89</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 354A % of Payroll	10.29%	10.29%
2. Required Contributions - Chapter 356 % of Payroll	11.18%	11.16%
3. Sufficiency (Deficiency) (A1-A2)	-0.89%	-0.87%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$76,279	\$86,539
b. Current Benefit Obligations (Table 8)	\$82,694	\$93,345
c. Funding Ratio (a/b)	92.24%	92.71%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$76,279	\$86,539
b. Actuarial Accrued Liability (Table 9)	\$90,759	\$99,899
c. Funding Ratio (a/b)	84.05%	86.63%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$124,717	\$133,157
b. Current and Expected Future Benefit Obligations	\$130,751	\$141,348
c. Funding Ratio (a/b)	95.39%	94.21%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	1,578	1,620
b. Projected Annual Earnings	\$38,751	\$41,314
c. Average Annual Earnings (Actual \$)	\$24,557	\$25,503
d. Average Age	42.5	42.8
e. Average Service	9.4	9.4
2. Others		
a. Service Retirements (Table 4)	625	627
b. Disability Retirements (Table 5)	10	13
c. Survivors (Table 6)	30	28
d. Deferred Retirements (Table 7)	51	43
e. Terminated Other Non-vested (Table 7)	159	304
f. Total	875	1,015

ANALYSIS OF EFFECT OF 1989 PENSION LEGISLATION
(Dollars in Millions)

	MSRS General	MSRS Corr	MSRS St Pat	MSRS Judges	MSRS Leg	MSRS ESO	PERA General	PERA P & F	IRA Teachers	Mpls Teachers	St Paul Teachers	Duluth Teachers	TOTAL
Actuarial Present Value of Projected Benefits:													
Before 1989 Legislation	\$3,072.7	\$124.9	\$265.8	\$97.5	\$35.4	\$2.5	\$4,968.0	\$1,049.2	\$7,714.1	\$900.9 *	\$559.3 *	\$145.8 *	\$18,936.1
Benefit Improvements	330.2	10.9	10.1	NA	5.6	NA	203.9	59.0	437.9	60.9	33.3	8.5	1,160.3
Interest from 8% to 8.5%	(163.0)	(7.1)	(12.2)	(3.7)	(1.6)	(0.1)	(163.2)	(72.5)	(341.6)	(32.9)	(44.9)	(13.0)	(855.8)
Total Change	167.2	3.8	(2.1)	(3.7)	4.0	(0.1)	40.7	(13.5)	96.3	28.0	(11.6)	(4.5)	304.5
After 1989 Legislation	\$3,239.9	\$128.7	\$263.7	\$93.8	\$39.4	\$2.4	\$5,008.7	\$1,035.7	\$7,810.4	\$928.9	\$547.7	\$141.3	\$19,240.6
Actuarial Present Value of Future Normal Costs:													
Before 1989 Legislation	\$773.6	\$35.7	\$74.1	\$31.9	\$8.8	\$0.4	\$835.0	\$400.3	\$1,614.3	\$153.1 *	\$122.6 *	\$44.9 *	\$4,094.7
Benefit Improvements	99.0	4.5	4.1	NA	2.9	NA	63.0	34.8	149.8	12.4	9.1	3.4	383.0
Interest from 8% to 8.5%	(89.4)	(4.2)	(8.9)	(3.0)	(1.1)	(0.1)	(64.5)	(51.2)	(203.1)	(17.7)	(18.6)	(6.9)	(468.7)
Total Change	9.6	0.3	(4.8)	(3.0)	1.8	(0.1)	(1.5)	(16.4)	(53.3)	(5.3)	(9.5)	(3.5)	(85.7)
After 1989 Legislation	\$783.2	\$36.0	\$69.3	\$28.9	\$10.6	\$0.3	\$833.5	\$383.9	\$1,561.0	\$147.8	\$113.1	\$41.4	\$4,009.0
Actuarial Accrued Liability:													
Before 1989 Legislation	\$2,299.1	\$89.2	\$191.7	\$65.6	\$26.6	\$2.1	\$4,133.0	\$648.9	\$6,099.8	\$747.8 *	\$436.7 *	\$100.9 *	\$14,841.4
Benefit Improvements	231.2	6.4	6.0	NA	2.7	NA	140.9	24.2	288.1	48.5	24.2	5.1	777.3
Interest from 8% to 8.5%	(73.6)	(2.9)	(3.3)	(0.7)	(0.5)	0.0	(98.7)	(21.3)	(138.5)	(15.2)	(26.3)	(6.1)	(387.1)
Total Change	157.6	3.5	2.7	(0.7)	2.2	0.0	42.2	2.9	149.6	33.3	(2.1)	(1.0)	390.2
After 1989 Legislation	\$2,456.7	\$92.7	\$194.4	\$64.9	\$28.8	\$2.1	\$4,175.2	\$651.8	\$6,249.4	\$781.1	\$434.6	\$99.9	\$15,231.6

* Includes cost of new mortality table.

ANALYSIS OF EFFECT OF 1989 PENSION LEGISLATION
(Dollars in Millions)

	MSRS General	MSRS Corr	MSRS St Pat	MSRS Judges	MSRS Leg	MSRS ES0	PERA General	PERA P & F	TRA Teachers	Mpls Teachers	St Paul Teachers	Duluth Teachers	TOTAL
Actuarial Accrued Liability:													
Before 1989 Legislation	\$2,299.1	\$89.2	\$191.7	\$65.6	\$26.6	\$2.1	\$4,133.0	\$648.9	\$6,099.8	\$747.8 *	\$436.7 *	\$100.9 *	\$14,841.4
Benefit Improvements	231.2	6.4	6.0	NA	2.7	NA	140.8	24.2	288.1	48.4	24.2	5.1	777.1
Interest from 8% to 8.5%	(73.6)	(2.9)	(3.3)	(0.7)	(0.5)	0.0	(98.6)	(21.3)	(138.5)	(15.1)	(26.3)	(6.1)	(386.9)
Total Change	157.6	3.5	2.7	(0.7)	2.2	0.0	42.2	2.9	149.6	33.3	(2.1)	(1.0)	390.2
After 1989 Legislation	\$2,456.7	\$92.7	\$194.4	\$64.9	\$28.8	\$2.1	\$4,175.2	\$651.8	\$6,249.4	\$781.1	\$434.6	\$99.9	\$15,231.6
Required Contribution (%):													
Before 1989 Legislation	7.42%	10.07%	23.11%	28.73%	35.12%	41.66%	9.31%	16.26%	12.93%	33.17% *	21.72% *	11.53% *	11.16%
Benefit Improvements	1.73%	1.85%	1.86%	NA	0.28%	NA	0.86%	1.64%	1.89%	2.87%	2.38%	1.61%	1.52%
Interest from 8% to 8.5%	-0.62%	-1.03%	-1.82%	-0.44%	-0.81%	0.04%	-0.51%	-1.69%	-0.90%	-0.99%	-2.38%	-1.80%	-0.77%
Amortization Date to 2020	-0.39%	-0.02%	-1.31%	-3.99%	-3.07%	-7.95%	-0.83%	0.00%	-1.40%	-4.77%	-1.97%	-0.18%	-0.99%
Total Change	0.72%	0.80%	-1.27%	-4.43%	-3.60%	-7.91%	-0.48%	-0.05%	-0.41%	-2.89%	-1.97%	-0.37%	-0.24%
After 1989 Legislation	8.14%	10.87%	21.84%	24.30%	31.52%	33.75%	8.83%	16.21%	12.52%	30.28%	19.75%	11.16%	10.92%
Required Contribution (Dollar):													
Before 1989 Legislation	\$105.2	\$4.2	\$7.5	\$5.4	\$2.1	\$0.1	\$179.9	\$32.2	\$243.7	\$39.1 *	\$22.2 *	\$4.7 *	\$646.3
Benefit Improvements	24.5	0.8	0.6	NA	0.0	NA	16.6	3.2	35.6	3.4	2.4	0.7	87.8
Interest from 8% to 8.5%	(8.8)	(0.4)	(0.6)	(0.1)	0.0	0.0	(9.9)	(3.3)	(17.0)	(1.2)	(2.4)	(0.7)	(44.4)
Amortization Date to 2020	(5.5)	0.0	(0.4)	(0.7)	(0.2)	0.0	(16.0)	0.0	(26.4)	(5.6)	(2.0)	(0.1)	(56.9)
Total Change	10.2	0.4	(0.4)	(0.8)	(0.2)	0.0	(9.3)	(0.1)	(7.8)	(3.4)	(2.0)	(0.1)	(13.5)
After 1989 Legislation	\$115.4	\$4.6	\$7.1	\$4.6	\$1.9	\$0.1	\$170.6	\$32.1	\$235.9	\$35.7	\$20.2	\$4.6	\$632.8

* Includes cost of new mortality table.

MEMORANDUM

TO: Legislative Commission on Pensions and Retirement
FROM: Robert E. Perkins and Michael C. Gunvalson
DATE: May 15, 1990
SUBJECT: Recommendations of Commission Actuary

Our 1989 actuarial valuation reports show that the three First Class City Teachers Funds have reported contribution deficiencies for five consecutive years. A deficiency occurs when the actuarially determined required contribution exceeds the statutory contribution.

We strongly recommend that effort be focused on strengthening the funding of the Minneapolis Teachers Fund. Our projection (see attached graph) shows that the Fund will be depleted by the year 2012.

The second priority should be to resolve the deficiency of the St. Paul Teachers Retirement Fund. Our asset projection shows that the fund grows until the year 2006 and then diminishes in size in the following years.

The purpose of this memorandum is to describe the current situation and provide reasons for adopting the recommendations. Attached to this memorandum is a graph showing the projection to the year 2020 of current assets (i.e., market plus 1/3 of the difference between cost and market) for the three First Class City Teacher Funds. In addition, there are three tables displaying the results of our actuarial valuations for the past four years.

Although the Duluth Teachers Retirement Fund shows a deficiency, we believe the Commission's attention should be focused on the Minneapolis and St. Paul Funds because of their much larger deficiencies.

Current Situation

1. **Statutory Contributions**

Each of these funds provide basic and coordinated benefits or, in the case of Duluth Teachers, old plan and new plan benefits. In the Minneapolis and St. Paul Funds, the statutory contribution level is much higher for the basic plan members than for the coordinated plan members.

The attached tables show the statutory contributions over the past five years based on the combination of basic and coordinated member contributions. These statutory contributions decrease each year, except for Duluth Teachers, because of the shift in the membership population from basic plan

to coordinated plan. This shift is taking place because the basic benefit is restricted to a closed group, and the coordinated benefit is provided to all new members.

2. Required Contributions

The required contribution is calculated by the Commission actuary in accordance with Chapter 356 of Minnesota Statutes. This required contribution is the sum of the normal cost, the supplemental contribution and a contribution to cover expenses.

During the period 1985 through 1989, the required contribution has been affected by the following events:

- The shift in emphasis from basic to coordinated benefits.
- Benefit changes, such as the 1989 pension legislation.
- Actuarial gains and losses, especially those arising from investments.
- Adoption of the statewide Teachers mortality table.
- Increase in assumed interest rate from 8.0% to 8.5%.
- Extension of the amortization period to the year 2020.

3. Contribution Deficiency

A contribution deficiency is produced each year that the required contribution exceeds the statutory contribution.

Minneapolis Teachers has had five consecutive years of deficiencies in excess of 10% of payroll with an average annual deficiency of \$12.2 million. The 1989 deficiency is 12.07% of payroll, or \$14.3 million.

The St. Paul Teachers has also had five years of deficiencies; however, at a much lower level. The 1989 deficiency is 3.77% of payroll, which equates to \$3.9 million.

The Duluth Teachers Retirement Fund has also had five years of contribution deficiencies. However, we believe these deficiencies are less critical because of the high funding ratio maintained by the Duluth plan.

4. Funding Ratio

After achieving higher funding ratios for five years, the Minneapolis Teachers funding ratio for 1989 dropped to under 50%, or back to the 1985 level.

The St. Paul Teachers has the second highest deficiency in contribution, and also the second lowest funding ratio at 59.9%.

As noted earlier, the Duluth Teachers Retirement Fund has a funding ratio which has exceeded 80% over four of the past five years.

Discussion

1. We believe the seriousness of the Minneapolis Teachers contribution deficiency and low funded ratio can best be demonstrated by an asset projection. The attached graph shows a projection comparing Minneapolis Teachers to St. Paul Teachers and Duluth Teachers. The projection shows increasing asset values for Minneapolis Teachers until the year 2001, at which time assets begin to diminish in value and quickly reduce to zero by the year 2012.
2. Minnesota Statutes require that the unfunded actuarial accrued liability be funded as a level percentage of pay by 2020 in the future. Large contribution deficiencies, such as those experienced by Minneapolis Teachers, are detrimental to the amortization of the unfunded actuarial accrued liability.

If the unfunded actuarial accrued liability is not reduced in an orderly fashion, the amortization portion of the required contribution (i.e., the supplemental contribution) will become an increasing burden in future years. This supplemental contribution would have increased in 1989 for the fifth consecutive year if the statutory funding date had not been changed to 2020.

REP/MCG/kp
Enclosure

Robert E. Perkins
Michael C. Lenoalson

Projection of Current Assets (In Millions of Dollars)

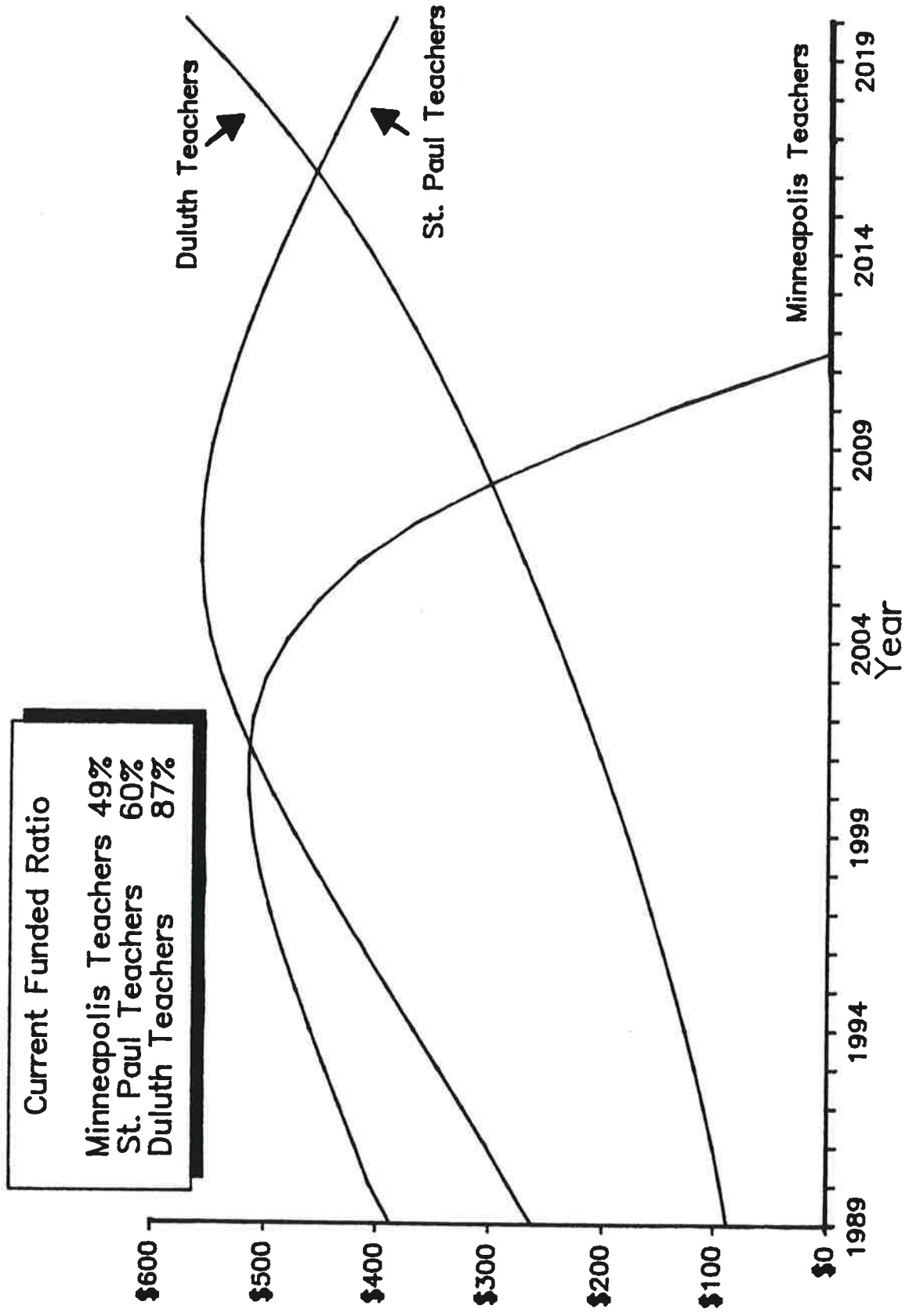


Table 1
Minneapolis Teachers' Retirement Fund

	<u>Current Statutory Contribution</u>	
	<u>Basic</u>	<u>Coordinated</u>
Employee	8.50%	4.50%
Employer	<u>13.35</u>	<u>4.50</u>
Total	21.85%	9.00%

	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
Statutory Contributions					
Employee	7.93%	7.81%	7.60%	7.44%	7.37%
Employer	<u>12.06</u>	<u>11.83</u>	<u>11.36</u>	<u>10.99</u>	<u>10.84</u>
Total	19.99%	19.64%	18.96%	18.43%	18.21%
Required Contributions					
Normal Cost	16.28%	16.22%	13.33%	13.25%	13.75%
Supplemental Contribution	14.22	14.41	14.62	15.28	14.75
Expenses	<u>1.28</u>	<u>1.39</u>	<u>1.39</u>	<u>1.23</u>	<u>1.78</u>
Total	31.78%	32.02%	29.34%	29.76%	30.28%
Sufficiency (Deficiency)					
%	(11.79)%	(12.38)%	(10.38)%	(11.33)%	(12.07)%
Millions of Dollars	\$(10.3)M	\$(12.1)M	\$(11.3)M	\$(12.9)M	\$(14.3)M
Accrued Liability Funding Ratios					
%	49.3%	50.8%	53.7%	54.1%	49.3%

Table 2

St. Paul Teachers' Retirement Fund

	<u>Current Statutory Contribution</u>				
	<u>Basic</u>	<u>Coordinated</u>			
Employee	8.00%	4.50%			
Employer	<u>12.63</u>	<u>4.50</u>			
Total	20.63%	9.00%			
	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
Statutory Contributions					
Employee	7.12%	6.96%	6.83%	6.71%	6.60%
Employer	<u>10.59</u>	<u>10.22</u>	<u>9.91</u>	<u>9.63</u>	<u>9.38</u>
Total	17.71%	17.18%	16.74%	16.34%	15.98%
Required Contributions					
Normal Cost	11.74%	11.42%	11.56%	11.36%	11.71%
Supplemental Contribution	9.87	8.97	8.37	8.95	7.49
Expenses	<u>0.34</u>	<u>0.38</u>	<u>0.46</u>	<u>0.53</u>	<u>0.55</u>
Total	21.95%	20.77%	20.39%	20.84%	19.75%
Sufficiency (Deficiency)					
%	(4.24)%	(3.59)%	(3.65)%	(4.50)%	(3.77)%
Millions of Dollars	\$(3.2)M	\$(3.0)M	\$(3.3)M	\$(4.3)M	\$(3.9)M
Accrued Liability Funding Ratios					
%	52.0%	57.1%	61.3%	60.2%	59.9%

Table 3
Duluth Teachers' Retirement Fund

Current Statutory Contribution

	<u>Old</u>	<u>New</u>
Employee	4.50%	4.50%
Employer	<u>5.79</u>	<u>5.79</u>
Total	10.29%	10.29%

	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
Statutory Contributions					
Employee	4.50%	4.50%	4.50%	4.50%	4.50%
Employer	<u>5.79</u>	<u>5.79</u>	<u>5.79</u>	<u>5.79</u>	<u>5.79</u>
Total	10.29%	10.29%	10.29%	10.29%	10.29%
Required Contributions					
Normal Cost	8.03%	8.14%	8.11%	8.16%	8.69%
Supplemental Contribution	2.81	2.10	1.55	2.13	1.42
Expenses	<u>0.71</u>	<u>0.78</u>	<u>0.73</u>	<u>0.89</u>	<u>1.05</u>
Total	11.55%	11.02%	10.39%	11.18%	11.16%
Sufficiency (Deficiency)					
%	(1.27)%	(0.73)%	(0.10)%	(0.89)%	(0.87)%
Millions of Dollars	\$(0.4)M	\$(0.2)M	\$(0.0)M	\$(0.3)M	\$(0.4)M
Accrued Liability Funding Ratios					
%	75.7%	82.9%	87.9%	84.1%	86.6%